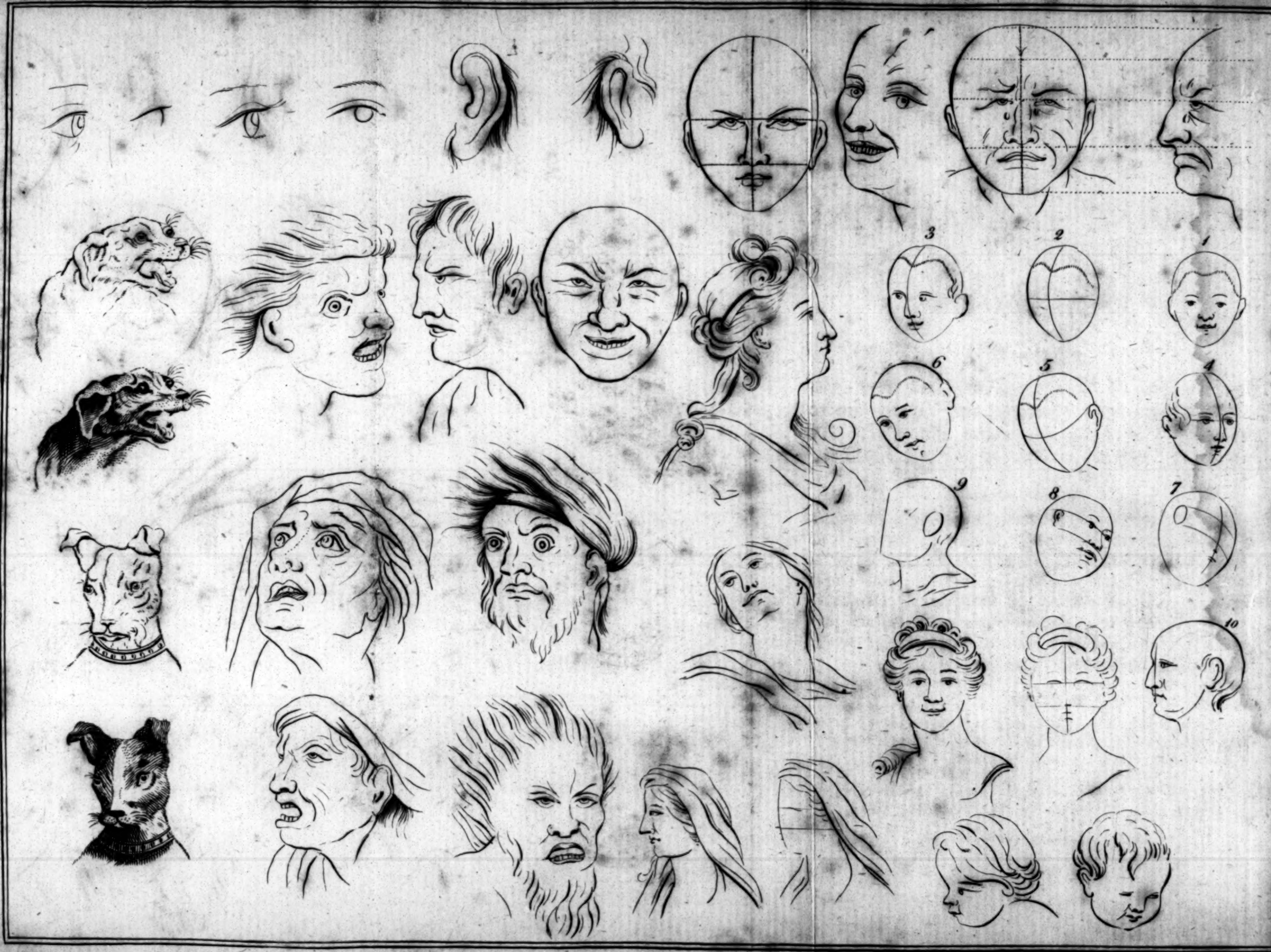
Pl. I.



THE
ART
OF
DRAWING AND PAINTING
IN
WATER-COLOURS.

WHEREIN

The *Principles* of DRAWING are laid down after
a natural and eaſy Manner; and Youth directed
in every Thing that relates to this uſeful Art,
according to the Practice of the beſt Maſters.

To which are annexed,

Familiar DIRECTIONS, whereby a Stranger in the Art
of Drawing may be readily taught to delineate any
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any Print or Drawing in the moſt elegant
Manner; and of taking off Medals, *&c.* inſtantly,
after a Variety of different Ways never before made
public; intermixed with curious Receipts for the Uſe
of Painters, Statuaries, Founders, *&c.*

WITH

INSTRUCTIONS for preparing, mixing, and managing all Sorts of
Water-Colours uſed in Painting, ſo as to repreſent Nature
in the greateſt Perfection.

The EIGHTH EDITION, corrected; and, beſides other Improvements,
illuſtrated with COPPER-PLATES.

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RB.23. a. 10343

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THE
ART
OF
DRAWING AND PAINTING
IN
WATER-COLOURS, &c.

PART I.

The Principles, &c. of DRAWING.

CHAP. I.

Of DRAWING *in General.*

DRAWING is the art of repreſenting the appearances of objects by imitation; or expreſſing, by lines and ſhades, the form or appearance of any thing in nature, or art; the copying of another draught, or any deſign conceived in the mind; and all this without the aſſiſtance of mathematical rules.

The art of drawing being an accompliſhment not more elegant, agreeable, and ornamental, than uſeful, is, therefore, by no means to be neglected in the education of youth, wherein any genius or inclination that way is diſcovered. Beſides its being of all arts the moſt univerſally admired and eſteemed, there are few other arts or profeſſions to which it is not aſſiſting; its great uſe is not only confined to painters, engravers, gardeners, embroidererers, weavers, and many others concerned in deſigning; but the mathematician, engineer, architect, and navigator, daily practiſe it. All deſigns and models are executed by it; its uſe appears in every ſtation of life, and it is equally admired by children and by adults.

To be able, on the ſpot, to take the ſketch of a fine building, or a beautiful proſpect of any curious production of art, or uncommon appearance in nature, is not only a very deſirable accompliſhment, but a very agreeable amuſement. Rocks, mountains, fields, woods, rivers, cataracts, cities, towns, caſtles, houſes, fortifications, ruins, or whatever elſe may preſent itſelf to view on our journeys or travels, in our own or in foreign countries, may be thus brought home, and preſerved for our future uſe, either in buſineſs or converſation. This art tranſmits to our view things that are long ſince paſt, or would otherwiſe periſh; repreſents to us the deeds of people and nations for many ages dead, and preſerves the features and reſemblance of anceſtors, or other valuable perſons, for many generations. It is therefore no wonder that an attainment ſo univerſally uſeful and admired ſhould be diſtinguiſhed as one of the higheſt embelliſhments of human life, and be patronized and cultivated by all the generous and ingenious part of mankind.

CHAP. II.

Of the proper Materials for DRAWING.

THE materials required in drawing, are black-lead-pencils; crayons of black, white, or red chalk; crow-quill pens; a rule and compaſſes; camel's hair pencils; and Indian ink.

Accuſtom yourſelf to hold your pencil further from the point than you do in writing, which will give you a better command of it, and contribute to render your ſtrokes more free and bold. The uſe of your pencil is to draw the firſt ſketches or outlines of your piece; as any ſtroke or line that is amiſs, may in this be more eaſily rubbed out than in any other thing; and when you have made your ſketch as correct as you can with the pencil, you may then draw carefully the beſt outline you have got, with your crow-quill pen and ink. The ink made uſe of for this purpoſe, muſt not be the common, but Indian ink; being much ſofter than the other, and not running; and, by mixing it with water, it may be made to any degree of ſtrength, and may be uſed in a pen like common ink. After uſing the ink, you may wipe out the pencil-lines, by rubbing the piece gently with the crumb of ſtale bread. Having thus got your outline diſcharged, your next work is to ſhade your piece properly, as you ſhall be directed below, either by drawing fine ſtrokes with your pen, where it requires to be ſhaded, or by waſhing it with the hair-pencil and the Indian ink. As to the rule and compaſſes, they are never, or rarely to be uſed, except in meaſuring the proportions of your figures after you have drawn them, to prove whether they are right or not; or in houſes, fortifications, and other pieces of architecture.

Red lead and red or black chalk are uſed in the ſame manner as black lead. White chalk and tobacco-pipe clay are uſed in heightening or giving ſtrong lights, and in drawing on coloured paper. Paſtils or crayons are any colours, mixed with tobacco-pipe clay, which, while ſoft and in the conſiſtency of a paſte, is rolled up in pieces, about the thickneſs of a quill, and two or three inches in length, and then dried; they are generally uſed on coloured paper; and the colours are rubbed and wrought one into another in ſuch a manner that no ſtrokes appear, but the whole looks as if it was done with a bruſh.

CHAP. III.

Of Light *and* Shade.

IT is the artful management of light and ſhade that gives the appearance of ſubſtance, roundneſs, and diſtance, to whatever bodies are repreſented by drawing. Draw a circle on a piece of paper; fill it up with any even colour, and it will appear to be a body with a round circumference and flat ſides: but by colouring it ſtronger in the middle, and cauſing it gradually to weaken towards the circumference, it will receive a convex appearance like that of a ball or globe: wherever the vivacity of colour is ſtrongeſt, that part of the object catches the ſight firſt, and appears neareſt to it: whereas its weakneſs and goings off are more and more broken and faint, and ſeem to fly farther off from the ſight. In rounding the parts of any object, the extremities in turning muſt loſe themſelves inſenſibly and confuſedly, without precipitating the light all of a ſudden into the ſhadows, or the ſhadows into the light, but the paſſage of the one into the other muſt be common and imperceptible; that is, by degrees of light into ſhadow, and ſhadow into light. Objects that are painted light muſt have a ſufficient breadth of ſhadow to ſuſtain them; and dark bodies muſt have a ſudden light behind, to detach them from the ground, or from thoſe objects that are placed behind them; otherwiſe they will appear confuſedly, as ſticking upon each other; whereas the oppoſition of ſhade to a light object, and of light to a dark one, gives a projection, and ſeparates them from other bodies.

There ſhould be a balance preſerved between the lights and ſhadows: a broad light ought not to be introduced into a draught without a large ſhadow. The nearer any object is to the eye, it is ſeen ſo much the ſtronger and plainer; the ſight is weakened by diſtances, and the more remote any object is, it is ſeen in a more imperfect manner. Therefore, thoſe objects which are placed foremoſt to the view, ought to be more finiſhed than thoſe that are caſt behind; and they ſhould have ſuch a relative dominion over each other, that as one object, by its heightenings, cauſes others to retire more backwards, ſo the ſame object muſt be chaſed, and made to appear farther from the ſight than others which are more ſtrongly illuminated.

It is not ſufficient that remote objects be only coloured in a more faint and languid manner; but, according to their diſtance, the parts muſt appear more or leſs confuſed; the eye not being able to diſcover minutely what is far ſeparated from it. Pure and unmixed white either draws an object nearer, or carries it off to a greater diſtance. If it be accompanied with black, the oppoſition of light and dark renders the object more ſenſible, and brings it nearer to the advanced part; but pure white, being the lighteſt of colours, unleſs it be forced forwards, and ſupported by black, will fly off to the remoteſt view. As for pure black, it is the heavieſt, moſt earthy, and moſt ſenſible of all colours, and brings the objects nearer to the ſight: it muſt be placed in maſſes, be inſenſibly confuſed, and have its proper repoſes.

The repreſentations of bodies give them always ſuch lights as are moſt proper and convenient to their ſuppoſed ſituations. If the objects are in the fields or open air, and the ſun not viſible, or obſcured by clouds, you muſt then introduce almoſt an univerſal light, though not warm and ſtrong, and your ſhades muſt be faint; but when the ſun is conſpicuous, and ſhines in its full luſtre, then the light muſt be very ſtrong and bold, and the ſhadows very dark. If the objects you repreſent be ſuppoſed in a room, a little, but not very much illuminated, and you ſurvey it from without, and ſtand on a level with the light that ſtrikes upon it, the ſhadows of that figure muſt be very ſoft, whereby the figure itſelf will appear beauteous to the eye; and will, notwithſtanding the ſoftneſs of the ſhadow, ſeem as imboſſed, and come boldly out. A ſmall light illuminating a body occaſions the ſhadows on the dark ſide to be large, and their extremities to be very bold. On the other hand, a light makes the ſhadows on the darker ſide to be more diſtinct and more ſoft in their limitations.

Reflection is to be uſed in delineating glittering or ſhining bodies, as glaſs, pearls, ſilver, *&c.* Let the cauſe of the reflection, be it more or leſs, be ſeen in the thing itſelf. Place all your lights one way through the whole work; and if the light falls ſideways on the picture, the other ſide, which is the fartheſt from the light, muſt be made the darkeſt. That part of the body muſt be made lighteſt which has the light moſt oppoſite to it; if the light be placed above the head, then the top of the head muſt be made lighteſt; the ſhoulder muſt receive the next greater degree of light; and thus muſt you continue to ſhade, loſing the light by degrees. By how much one part of the body projects more than another, it muſt by ſo much be made the lighter: and, on the contrary, thoſe parts that bend inward muſt be made ſo much the darker. Two equal lights muſt never be made in one and the ſame picture; the greater is to ſtrike forcibly into the middle, and with greateſt luſtre on thoſe parts of the deſign where the principal figures and ſtrength of the action ſeem to lie, diminiſhing it gradually as it approaches neareſt the extremities of the piece.

CHAP. IV.

General Rules for DRAWING.

BEGIN with plain geometrical figures, as lines angles, triangles, polygons, arches, circles, ovals, cones, cylinders, and the like, being the foundations of all other proportions. The circle is of uſe in the ſeveral orbicular forms, as the ſun, moon, globes, *&c.* The oval, in giving a juſt proportion to the face and mouth; and the ſquare confines a picture you are to copy, *&c.* The triangle is of uſe in drawing a ſide or half face; angles, and arches, in perſpective; and the polygon in ground-plats, fortifications, *&c.* The cone, in ſpires, ſteeples, tops of towers, *&c.* The cylinder, in columns, pillars, *&c.*

Having brought your hand to be fit and ready in general proportions, accuſtom yourſelf to give every object its due ſhades, according to its concavity or convexity, and to elevate or depreſs the ſame, as the object appears either nearer or farther off the light. Before you begin to work, view your original with cloſe attention; divide it in your mind into ſeveral parts; obſerve the length, the breadth, and the ſimilitude of each part; conſider their proportion to each other and the whole; the diſtances from one part to the other, and what parts lie oppoſite to each other.

After you have done your copy, view it afreſh, by comparing it with the original, for the diſcovering and amending of faults, as it will not only ſerve to perfect you in that particular draught, but will improve your knowledge of lines and proportions in general, and in time enable you for the neareſt imitations. The outlines muſt be drawn in a gliding manner, large and ſmooth, which will give them the reſemblance of life and motion. You muſt preſerve in your draught a ſtrong reſemblance between the parts and the whole; every member ought to be made to agree; ſtrong limbs have no relation to a conſumptive body, or decayed old age; and the eyes, legs, hands and feet, ſhould be exactly paired.

Having good copies to draw after, learn to reduce them to other proportions, either larger or ſmaller, and this by frequent practice. In drawing fruits, as apples, pears, cherries, *&c.* with their leaves; herbs, trees, *&c.* of different kinds; as alſo in the imitation of beaſts, fowls, fiſhes, *&c.* it is requiſite not only to be perfect in laying down the exact proportions, but, before you proceed to the ſhadowing and trimming your work, to be well acquainted in the general or outward lines; and this is ſtill more neceſſary in imitating the body of a man with all its lineaments, as head, noſe, eyes, ears, cheeks, arms, and ſhoulders; as alſo in the drapery, or imitation of the clothing, and the artificial ſetting off the outward coverings, habits, and ornaments of the body, in their natural and proper folds.

CHAP. V.

Particular Directions for DRAWING.

IN drawing after a picture or print, you muſt take care to place it in ſuch a light that the gloſs of the colours may not interrupt your view, but ſo that the light and your eye may fall equally and oblipuely upon the piece. To this end you are to conſider from what point, and in what direction the light falls upon the objects, according to which direction let all your lights and ſhades be placed throughout the work. That part of the object muſt be the lighteſt which has the light moſt directly oppoſite to it; if the light falls ſideways on your picture, you muſt make that ſide which is oppoſite to it lighteſt; and, on the contrary, that ſide which is fartheſt from it darkeſt. Let the piece be placed at ſuch a diſtance, that, upon opening your eyes, you may view it all at once: and the larger the picture is, it ſhould be ſo much the more placed off at the greater diſtance; but right before you, and a little reclined.

Draw all your outlines at firſt very faint with a coal, which may eaſily be rubbed out again with the feathers of a duck's wing, or the crumb of bread; and theſe outlines ſhould be drawn true, and agreeable to the patrern, before you begin to ſhadow any part of the object. The outlines next the light ſhould be drawn more faint; and when you have drawn one feature, it ſhould be a direction for you, in ſome meaſure, to draw another, by obſerving with your eye the diſtance from that to the next feature, making a full mark at the place with your coal; then draw it and ſo on to the next, till you have drawn the whole figure.

Then obſerve the middle of the picture you would copy, and touch upon the paper with the point of your coal; afterwards obſerve the more conſpicuous and uppermoſt figures, if there are more than one, which you are to touch lightly in their proper places. Thus running over the whole draught, you will ſee, as it were, the ſkeleton of the piece you are to draw.

Having made out theſe ſketches, view them diligently, to ſee if they anſwer your pattern or not; for the geſtures of the life ought to ſhew themſelves eminently in the firſt and rudeſt draught of the piece; correct and amend whatever you perceive amiſs; adding and diminiſhing as it varies from the pattern, by which means it will be brought nearer and nearer to the life.

Obſerve the diſtance of one limb, joint, or muſcle, from another, and the ſame in all other accidents of the figure; their length, breadth, turnings, *&c.* Shadow next to the light very faintly: and where you ſee bold and free touches, be not timorous in expreſſing the ſame. In drawing a head after the life, or otherwiſe, take care to place the features exactly right upon the croſs-lines, whether it be a full face, or three-quarter face. In fore-ſhortening, you muſt make the croſs-lines to fly upwards, but where the aſpect is downwards, they muſt be made downwards in a circular manner.

Having drawn the outlines true with a coal, you are to proceed to trace the ſame lines again with a pen, Indian ink, *&c.* drawing them with more exactneſs; and by imitating all the hatches, with their exact diſtances one from another, their croſſings, turnings, and windings, with more boldneſs and freedom, perfect your deſign.

In drawing after a naked body, all the muſcles are not to be ſo plainly expreſſed as in anatomical figures; but that ſide whoſe parts are moſt apparent, and of ſignification in the performance of any action, muſt be made to appear more or leſs, according to the force of that action.

In drawing young perſons, the muſcles muſt not appear manifeſtly ſo hard as in elder and full-grown perſons; the ſame thing is to be obſerved as to fat and fleſhy perſons, and ſuch as are very delicate and beautiful; and in women ſcarce any muſcles at all are to be expreſſed, or but very little, unleſs it be in ſome very forcible action, and then too they are to be repreſented very faintly: the like is alſo to be obſerved as to children. The motion of the whole body muſt be conſidered in drawing of the muſcles; as in the riſing and falling of the arms, the muſcles of the breaſt appear either more or leſs: the hips do the like, according as they are bent outward or inward; and it is the ſame chiefly in the ſhoulders, ſides, and neck, according to the ſeveral actions of the body.

The breadth and largeneſs of a picture is alſo to be conſidered; it ſhould be larger about the legs and garments, ſhewing itſelf ſlender above, by diſcovering one ſhoulder, and hiding the other, which is ſhortened by turning the body. But ſometimes the figure is to be repreſented biggeſt in the upper parts, by repreſenting either or both the ſhoulders, or both the arms; ſhewing the one leg, and hiding the other; or both of them after one manner, at diſcretion. Neither ought this to be obſerved only in the whole body, but even in every part, ſo that in the legs when a muſcle is raiſed outwards on the one ſide, that which is directly on the contrary ſide muſt be drawn in, and hid, as it appears in the life.

The proportion of the figure ought to be multiplied by degrees, in proportion of one to two, three, four, *&c.* for herein the chief ſkill conſiſts; the diameter of the biggeſt place between the knee and the foot is double the leaſt, and the largeſt part of the thigh triple.

CHAP. VI.

Of drawing FACES.

IN drawing a head, it is uſually divided into four equal parts. 1. From the crown of the head to the top of the forehead. 2. From the top of the forehead to the eyebrows. 3. From the eyebrows to the bottom of the noſe. 4. From thence to the bottom of the chin. But this proportion is not conſtant; thoſe features, in different men, being often very different as to length and ſhape. In a well-proportioned face, however, they are nearly right.

To direct you, therefore, in forming a perfect face, your firſt buſineſs is to draw a complete oval, as you ſee in plate I. figure 1, in the middle of which, from the top to the bottom, draw a perpendicular line; and through the center, or middle of this line, draw another, directly acroſs from one ſide to the other of your oval. On theſe two lines all the features of the face are to be drawn, as follows. Divide your perpendicular line into four equal parts; the firſt muſt be allotted to the hair of the head: the ſecond is from the top of the forehead to the top of the noſe, between the eyebrows: the third is from thence to the bottom of the noſe; and the fourth includes the lips and chin. The line acroſs the perpendicular one, or the breadth of the face, is always ſuppoſed to be the length of five eyes; you muſt therefore divide it into five equal parts, and place the eyes upon it ſo as to leave exactly the length of one eye betwixt them. This is to be underſtood only of a full front face; for if it turns to either ſide, then the diſtances are to be leſſened on that ſide which turns from you, leſs or more, in proportion to its turning. The top of the ear is to riſe parallel to the eyebrows, at the end of the diameter or croſs line, and the bottom of it muſt be equal to the bottom of the noſe; the noſtrils ought not to come out farther than the corner of the eye in any face; and the middle of the mouth muſt always be placed upon the perpendicular line. The mouth, when ſhut, is as large as an eye.

The following is an ingenious device, which perhaps may ſomewhat aſſiſt the young practitioner, in forming the face according to its different turnings, and in placing the features properly thereon. Procure a piece of ſmooth wood, turned for the purpoſe, in the ſhape of an egg, which is nearly the ſhape of the human head; draw a line lengthways quite round it, as in the laſt fig. and divide this line into two equal parts by another line drawn directly acroſs it at right angles. The features being drawn on theſe two lines, according to the rules delivered above, will produce a fore right face. Turn the oval a ſmall matter from the left hand to the right, and the perpendicular will appear bent like a bow, as you ſee in fig. 2; upon which the particular features are to be drawn, as in fig. 3; always obſerving in what manner the noſe projects beyond the round of the oval. The ſame muſt be obſerved, if you turn the oval from the right hand to the left, as in fig. 4; and if you incline the oval downwards, and to the right, the lines of the croſs will appear, as in fig. 5; and the features drawn on them, as in fig. 6. If you turn it upwards, reclining to the left, the lines of the croſs will appear, as in fig. 7, and a face drawn on them, as in fig. 8. A great variety of faces may be ſhewn by this oval, according as you incline, recline, or turn it more or leſs.

But thoſe figures which come ſideways are to be drawn by means of a perpendicular, as in fig. 9, upon which the forehead, noſe, mouth, and chin are to be drawn, as you ſee in fig. 10.

It is to be obſerved, that if the face be fat, the cheeks will ſeem to ſwell; if lean, the jaw-bones will ſtick out, and the cheeks fall in; but if it be neither too fat nor too lean, it will be nearly round. Touch the features lightly, where the eyes, noſe, mouth and chin, ſhould ſtand: then begin to draw them more exactly, and ſo proceed till you have finiſhed the face; after which draw the hair, beard, and ſhadows about it. You are to conſider all thoſe chief touches which give life to a face, and that diſcover the diſpoſition of the mind: thus the mouth extended, and the corners turning a little up, ſhews a ſmiling countenance, *&c.* You muſt take care that the ſhadows be not made too dark where they ſhould be light, becauſe afterwards they cannot be rendered more light; and remember, that they are to be more faint and light in a fair, than in a ſwarthy complexion.

CHAP. VII.

Of the MEASURES *and* PROPORTIONS *of the ſeveral Parts of the Body.*

THE ancients commonly allowed eight heads to their figures, though ſome of them had but ſeven; however, the moderns ordinarily divide their figure into ten faces: that is, from the crown of the head to the ſole of the foot, in the manner following. From the crown of the head to the forehead, is the third part of the face. The face begins at the loweſt hairs which are upon the forehead, and ends at the bottom of the chin. The face is divided into three proportional parts: the firſt contains the forehead, the ſecond the noſe, and the third the mouth and chin. From the chin to the pit between the collar-bones, are two lengths of a noſe. From the pit betwixt the collar-bones to the bottom of the breaſt, one face. From the bottom of the breaſt to the navel, one face. From the navel to the genitals, one face. From the genitals to the upper part of the knee two faces. The knee contains half a face. From the lower part of the knee to the ancle, two faces. From the ancle to the ſole of the foot, half a face.

A man, when his arms are ſtretched out, is from the longeſt finger of his right hand to the longeſt of his left, as broad as he is long. From one ſide of the breaſts to the other, two faces. The bone of the arm, called *humerus*, is the length of two faces, from the ſhoulder to the elbow. From the end of the elbow to the root of the little finger, the bone called *cubitus*, with part of the hand, contain two faces. From the box of the ſhoulder-blade to the pit betwixt the collar-bones, one face. If you will be ſatisfied in the meaſures of breadth, from the extremity of one finger to the other, ſo that this breadth ſhould be equal to the length of the body, you muſt obſerve that the boxes of the elbows with the humerus, and of the humerus with the ſhoulder-blade, bear the proportions of half a face, when the arms are ſtretched out. The ſole of the foot is the ſixth part of the figure. The thumb contains a noſe. The inſide of the arm, from the place where the muſcle diſappears, which makes the breaſt, called the pectoral muſcle, to the middle of the arm, four noſes. From the middle of the arm to the beginning of the hand, five noſes. The longeſt toe is a noſe long. The two utmoſt parts of the teats, and the pit betwixt the collarbones of a woman, make an equilateral triangle.

For the breadth of the limbs no preciſe meaſures can be given; becauſe the meaſures themſelves are changeable, according to the quality of the perſons, and according to the movement of the muſcles.

CHAP. VIII.

Of drawing the BODY *at full Length.*

FIRST make your oval for the head, and having divided it, according to the inſtructions already given, draw a perpendicular line from the top of the head to the ſole of the foot, and meaſure out eight lengths of the head. This line is of ſpecial uſe to direct you in placing the figure upright; and in the action of the poſture, where it falls in, and where it ſwells out. One head's length from the chin, you muſt draw the breaſts; the third meaſure reacheth to the navel; the fourth to the privities; the fifth to the middle of the thigh; the ſixth to the lower part of the knee; the ſeventh to the lower part of the leg; and the eighth to the heel and ſole of the foot.

Obſerve, in every meaſure, what touches there are of the muſcles. Draw that leg firſt on which the body ſtands; then draw the other; and after that the arms and hands; but draw, at firſt, all the parts very lightly, with a coal only: becauſe there is leaſt trouble in altering and rubbing out the coal. As for the hands, they are twice as long as they are broad, and each of their parts has its length, breadth, and thickneſs. The nail upon the finger is about half the joint it is upon. The length of the foot is a ſixth part of the height of a perſon; and the length is five eighths more than the breadth. The length of the face and hands ought to be exactly equal, and makes but juſt the tenth part of a perſon's height.

The rules in drawing children are as follow: Some make a child to contain five meaſures of the head, *viz.* from the top of the head to the privities, three, and in the thighs and legs two more; the breadth between the ſhoulders, the length of a head and a half; the breadth of the body above the navel, the length of one head; and the breadth of the upper part of the thigh, is the third part of two lengths of the head; the breadth of the knee is juſt the meaſure there is betwixt the eyes and the chin; the ſmall of the leg, and the brawn of the arm, are of the thickneſs of the neck.

In general, let it be obſerved always to begin with the right ſide of the piece you are copying, for by ſo doing you will always have what is done before your eyes, and the reſt will follow more naturally, and with greater eaſe; whereas, if you begin with the left ſide, your hand and arm will cover what you do firſt, and deprive you of the ſight of it; by which means you will not be able to proceed with ſo much eaſe, pleaſure, or certainty. As to the order and manner of your proceeding, in drawing the human body, you muſt firſt ſketch the head; then the ſhoulders, in their exact breadth; then draw the trunk of the body, beginning with the arm-pits (leaving the arms till afterwards), and ſo down to the hips on both ſides; being ſure to obſerve the exact breadth of the waiſt. When you have done this, then draw that leg which the body ſtands upon, and afterwards the other, which ſtands looſe; then draw the arms, and laſt of all the hands.

Take notice alſo of the bowings and bendings of the body, making the part oppoſite to that which bends correſpond in bending with it. For inſtance, if one ſide of the body bends in, the other muſt ſtand out anſwerable to it; if the back bends in, the belly muſt ſtick out; if the knee bends out, the ham muſt fall in; and ſo of any other joint in the body. Finally, endeavour to form all the parts of your figure with truth, and in juſt proportion, not one arm or one leg bigger or leſs than the other; not broad ſhoulders with a thin ſlender waiſt, nor raw and bony arms, with thick and gouty legs: but let there be a kind of harmony and agreement amongſt the members, and an agreeable ſymmetry throughout the whole figure.

But as the eſſence of drawing conſiſts in making, at firſt, a good ſketch, you muſt in this particular be very careful and accurate; draw no part perfect or exact, till you ſee whether the whole draught be good; and when you have altered that to your mind, you may then finiſh one part after another as curiouſly as you can. In drawing the eyes, ears, legs, arms, hands, feet, *&c.* great care, ſtudy, and practice are requiſite: this muſt be learned by carefully imitating the beſt prints or drawings you can get of eyes, ears, *&c.* for as to the mechanical rules of drawing them by lines and meaſures, they are not only perplexed and difficult, but alſo contrary to the practice of the beſt maſters. But the actions and poſtures of the hand are ſo many and various, that no certain rules can be given for drawing them that will univerſally hold good; and as the hands and feet are difficult members to draw, it is neceſſary, and well worth while, to beſtow ſome time and pains about them, carefully imitating their various poſtures and actions, ſo as not only to avoid all lameneſs and imperfection, but alſo to give them life and ſpirit.

In drawing a labouring man, you muſt repreſent him with ſtrong limbs and raiſed muſcles, ſwelling and ſtanding out, eſpecially in bearing burdens, drawing weights, leaping, walking, combating, or ſuch like violent exerciſes. In repreſenting perſons aſleep, you muſt carefully avoid giving any ſuch poſtures or actions in their lying as would not in all probability afford reſt; for a great want of judgment would appear in repreſenting their limbs or bodies ſupported by their own force, and not by the help of ſomething elſe.

With regard to the repreſentations of the paſſions, Mr. *De Piles* obſerves, that it is abſurd, as well as impoſſible, to pretend giving ſuch particular demonſtration of them as to fix their expreſſion to certain ſtrokes which the painter ſhould be obliged to make uſe of, as eſſential and invariable rules. This, ſays he, would be depriving the art of that excellent variety of expreſſion, which has no other principle than diverſity of imagination, the number of which is infinite. The ſame paſſion may be expreſſed ſeveral ways, each yielding more or leſs pleaſure in proportion to the painter's underſtanding, and the ſpectator's diſcernment.

Though every part of the face contributes towards expreſſing the ſentiments of the heart, yet the eyebrow, according to Mr. *Le Brun*, is the principal ſeat of expreſſion, and where the paſſions make themſelves moſt known. It is certain, ſays he, that the pupil of the eye, by its fire and motion, very well ſhews the agitation of the ſoul; but then it does not expreſs the kind or nature of that agitation, whereas the motion of the eyebrow differs according as the paſſions change their nature. To expreſs a ſimple paſſion, the motion is ſimple; to expreſs a mixt paſſion, the motion is compound. If the paſſion be gentle, the motion is gentle; if it be violent, the motion is ſo too. We may farther obſerve, ſays he, that there are two kinds of elevation in the eyebrows; one in which the eyebrows riſe up in the middle; this elevation expreſſes agreeable ſenſations; and it is to be obſerved, that then the mouth riſes at the corners: another, in which the eyebrows riſe up at the ends and fall in the middle, denotes bodily pain; and then the mouth falls at the corners. In laughter all the parts agree, for the eyebrows, which fall towards the middle of the forehead, make the noſe, the mouth, and the eyes follow the ſame motion. In weeping, the motions are compound and contrary, for the eyebrows fall towards the noſe, and over the eyes; and the mouth riſes that way. It is to be obſerved alſo, that the mouth is the part of the face which more particularly expreſſes the emotions of the heart; for when the heart complains, the mouth falls at the corners; when it is pleaſed, the corners of the mouth are elevated; and when it has an averſion, the mouth ſhoots forward, and riſes in the middle.

The head, ſays Mr. *De Piles*, contributes more to the expreſſion of the paſſions, than all the other parts of the body put together. Thoſe ſeparately can only ſhew ſome few paſſions, but the head expreſſes them all. Some, however, are more peculiarly expreſſed by it than others as humility, by hanging it down; arrogance, by lifting it up; languiſhment, by inclining it on one ſide; and obſtinacy with a ſtiff and reſolute air, makes it ſtand upright, fixed and ſtiff between the ſhoulders, The head alſo beſt ſhews our ſupplications, threats, mildneſs, pride. love, hatred, joy, and grief. The whole face and every feature contribute ſomething, but more eſpecially the eyes; yet though the paſſions of the ſoul are moſt viſible in the lines and features of the face, they often require alſo the aſſiſtance of other parts of the body: Without the hands, for inſtance, an action is weak and imperfect; their actions, which are almoſt infinite, create numberleſs expreſſions.

It is by them that partly we deſire, hope, promiſe, call and ſend back; they are the inſtruments of threatening, prayer, praiſe, &c. by them we in a great meaſure approve, condemn, refuſe, admit, fear, aſk, expreſs our joy and grief, our doubts, regrets, pain, and admiration; but to ſay how theſe parts muſt be diſpoſed for expreſſing the various paſſions, is impoſſible; nor can any exact rules be given for it, both becauſe the taſk would be infinite, and becauſe every one muſt be guided, in this, by his own genius and the particular turn of his ſtudies.

CHAP. IX.

Of DRAPERY.

IN the art of clothing your figures, or caſting the drapery upon them with elegance and propriety, many things are to be obſerved; however, this art conſiſts chiefly in three points, *viz.* The order of the folds or plaits, the different quality of the ſtuffs, and the variety of their colours. As to the folds, they ought to be ſo managed as that you may eaſily perceive what it is they cover, and diſtinguiſh it from any thing elſe; as for inſtance, that you ſee it is an arm that is under the drapery, and not a leg, or a leg, and not an arm, &c. Again, the folds ought to be large, and a contraſt ſhould be obſerved between them ; otherwiſe, in the firſt place, they break and divide the ſight too much. and in the next place the drapery will be too ſtiff. As to the quality of the ſtuffs, it ſhould be well conſidered ; ſome folds being abrupt and harſh, while others flow more ſoft and eaſy. Again, the ſurface of ſome have a luſtre, while others are flat and dead ; and ſome are fine and tranſparent, while others are firm and ſolid. The variety of colours, when well managed, makes the greateſt beauty in painting : ſome are not equally agreeable with reſpect to each other ; and ſome are never to be placed near certain others.

The drapery muſt never be made to adhere or ſtick too cloſe to the parts of the body, but it muſt ſeem to flow round, and, as it were, embrace them ; yet in ſuch a manner as that the figure may be eaſy, and have a free motion. A great lightneſs and motion of the drapery are only proper in figures in much agitation, or expoſed to the wind. The nudities of the figure ſhould always be deſigned before you proceed to draw the draperies. Draw the outlines of the garments lightly ; then draw the great folds firſt, and ſtroke theſe into leſſer ; taking care that they do not croſs one another. The draperies that cover thoſe parts which are expoſed to great light, muſt not be ſo deeply ſhaded, as to ſeem to pierce them ; nor ſhould thoſe members be croſſed by folds that are too ſtrong ; leſt, by the too great darkneſs of their ſhades, the members look as if they were broken. Folds, in general, ſhould be large, and as few as poſſible : however, they muſt be greater or leſs, according to the quantity and quality of the ſtuffs of which the drapery is ſuppoſed to be made. Suit the garments to the body, and make them bend with the body, according as it ſtands in or out, ſtrait or crooked, or as it bends one way or another; and the cloſer the garment fits to the body, the narrower and ſmaller muſt be the folds.

The quality of the perſon is alſo to be conſidered in the drapery; for inſtance, if they are magiſtrates, their draperies ought to be large, fine, and flowing; if country-clowns, they ought to be coarſe and ſhort; and if ladies and nymphs, light and ſoft, &c. Folds well imagined give much ſpirit to any kind of action, becauſe their motion implies the like in the acting member, which ſeems to draw them forcibly, and make them more or leſs ſtirring, as the action is more or leſs violent. An artful complication of folds in a circular manner, greatly helps the effect of fore-ſhortenings. All folds conſiſt of two ſhades and no more, which you may turn with the garment at pleaſure, ſhadowing the inner ſide more deeply.

The ſhades in ſilks and fine linen are very thick and ſmall, requiring little folds and a light ſhadow. Obſerve the motion of the air or wind, in order to draw the looſe apparel all flying one way, and draw that part of the garment that adheres cloſeſt to the body, before you draw the looſer part that flies off from it, leſt by drawing the looſe part of the garment firſt, you ſhould miſtake the poſition of your figure, and place it awry.

Rich ornaments, when judiciouſly and ſparingly uſed, may ſometimes contribute to the beauty of draperies. But ſuch ornaments are far below the dignity of angels or heavenly figures; the grandeur of whoſe draperies ought rather to conſiſt in the boldneſs and nobleneſs of the folds, than in the quality of the ſtuff, or the glitter of ornaments. Light and flying draperies are proper only to figures in great motion, or in the wind:

but when in a calm place, and free from violent action, their draperies ſhould be large and flowing, that, by their contraſt, and the fall of the folds, they may appear with grace and dignity.

CHAP. X.

Of drawing MIXED FIGURES.

IN order to draw the form of any beaſt, begin at the forehead, with the lead or coal, drawing downward the noſe, mouth, upper and nether chap, ending the line at the throat. Then viewing it again, from the part where you formerly begun, continue it over the head, ears, and neck, till you have given the full compaſs of the buttock. Afterwards mark out the legs, and touching out the breaſt with the eminency thereof, finiſh the tail, paws, tongue, teeth, beard, and the ſeveral ſhadows.

In drawing beaſts, you muſt be well acquainted with their ſhape and action, without which you will never perform any thing excellent in this way; and whatever beaſt you draw, you muſt be ſure to give a ſketch of the landſkip of the country natural to that beaſt.

In drawing birds you are to begin alſo at the head, continuing the breaſt-line from under the throat down to the legs; then begin at the pinion for making the wing; this being joined to the back-line, the figure will be preſently finiſhed. The eyes, legs, and tail are to be drawn laſt; the feathers, beginning at the head very ſmall, muſt fall backwards one way in five ranks, ſtill increaſing till finiſhed.

Inſects, as flies, bees, waſps, graſshoppers, worms, and ſuch like, are drawn with great eaſe, provided you, for the firſt time, have the original before your eyes.

In drawing a flower, begin from the roſe-tuft or wart in the middle, as in a roſe or marigold with the yellow tuft; which being made, draw lines equally divided from thence to the greateſt compaſs or extent of the flower. They may be drawn either fully open, or in the bud; the leaves may be firſt drawn rudely, afterwards giving them their veins, or jaggedneſs.

CHAP. XI.

Of drawing LANDSKIPS, BUILDINGS, &c.

ALL true drawing conſiſts in nicely meaſuring the diſtances of each part of your piece by the eye. In order to facilitate this, you are to imagine in your own mind, that the piece you copy is divided into ſquares: as for example; ſuppoſe, or imagine, a perpendicular and an horizontal line croſſing each other in the centre of the picture you are to copy: then ſuppoſe alſo two ſuch lines croſſing your own copy. Obſerve in the original what parts of the deſign thoſe lines interſect, and let them fall on the ſame parts of the ſuppoſed lines in your copy. If you are to draw a landſkip from nature, take your ſtation on a riſing ground where you may have a large horizon, and mark your tablet into three diviſions downwards, from the top to the bottom: and divide in your own mind, the landſkip you are to take into three diviſions alſo. Then turn your face directly oppoſite to the middle of the horizontal line, keeping your body fixed, and draw what is directly before your eyes upon the middle diviſion of your tablet; then turn your hea but not your body, to the left hand, and delineate what you view there, joining it properly to what you had done before. Laſtly, do the ſame by what is to be ſeen on your right hand, laying down every thing exactly, both with reſpect to diſtance and proportion. Make the neareſt objects in your piece the higheſt, and thoſe that are further off to ſhoot away lower and lower, till they come almoſt level with the line of the horizon; leſſening every thing proportionably to its diſtance, and obſerving alſo, to make your objects fainter and leſs diſtinct, the farther they are removed from your eye. Make all your lights and ſhades fall one way; and let every thing have its proper motion, as trees ſhaken by the wind, the ſmall boughs bending more and the large ones leſs; water agitated by the wind, and daſhing againſt ſhips or boats, or falling from a precipice upon rocks and ſtones, and ſpirting up again into the air, and ſprinkling all about: clouds alſo in the air, now gathered with the winds, now violently condenſed into hail, rain, and the like; always remembering that whatever motions are cauſed by the wind muſt all be made the ſame way.

Let the work imitate the ſeaſon it is intended to repreſent; as, if you intend it for a winter-piece, repreſent the felling of woods, ſliding upon the ice, fowling, hunting, *&c.* making the trees every-where naked, or laden with ſnow or hoar-froſt; the earth bare; the air thick or heavy; the water frozen, with carts paſſing over it, *&c.*

Let every ſite have its proper adjuncts or additional graces, as the farm-houſe, wind-mill, water-mill, woods, flocks of ſheep, herds of cattle, pilgrims, ruins of temples, caſtles and monuments, with a thouſand ſuch other things proper to particular ſubjects.

CHAP. XII.

Curious RULES *for drawing any Object, in its Outlines, as exact as Nature; with ſome farther* INSTRUCTIONS *for Shadowing,* &c. *without any Regard to the forementioned Rules, or any Knowledge in the Art of* DRAWING.

TAKE a ſheet of the thinneſt, or white brown paper, and bruſh it over with oil of turpentine, which will immediately render it tranſparent: then, after drying the paper in the air, ſtrain it upon a frame, and fix it againſt the object you deſign to draw: this done, place right before it, a piece of wood with a hole in it, fit for one's eye to look through, and as you meet any outlines of the object on the tranſparent paper, trace them over with a pencil; by which means you will obtain the juſt proportion, and true repreſentation of any object in its outlines.

To render this ſtill more elegant, obſerve the tracings of your draught, wherever the ſhades are, and mark them with your pencil; for all the art in the world can never diſpoſe the ſhades ſo regularly, as one may touch by this method; but the ſhades muſt be drawn quickly after the outlines are drawn, not at different times, becauſe the ſun inſtantly changes them.

Here obſerve, as in certain objects you will have fainter, ſtronger, and darker ſhades, in your remarks of them, to take ſuch memorandums as may direct you how to finiſh them with Indian ink, or other colour, when you ſit down to complete your work. To this end the beſt way is, before you trace out your object, to prepare three ſhells or gallipots of Indian ink, mixed with common water, *viz.* one of a very faint black, one of a middling black, and one of an intenſe black, numbering them 1, 2, 3, and as you make your obſervation on the ſhades of your object, mark upon your draught the ſame numbers as they happen to appear, ſo that afterwards you may finiſh with certainty.

In this regard the tranſparent paper is of great uſe; for being laid upon any paper or print in a looſe ſheet, all the lines will be ſeen ſo perfectly through it, that you may copy them with the greateſt eaſe; and if the print or picture be done by a good maſter, you can ſee which lines are ſtrong, which ſoft, and how to imitate them.

There is yet another way to take views and landſkips, which ſome prefer to the tranſparent paper; and that is, either with white or black tiffany or lawn ſtrained upon a frame, and uſed in the ſame manner as the paper, excepting that, as the black-lead pencil is uſed to the paper, on the white tiffany and on the lawn, you muſt uſe charcoal very ſoft and finely powdered; but on the black tiffany, very tender white chalk is to be uſed.

CHAP. XIII.

Several other curious and eaſy Methods of taking VIEWS, *copying* DRAUGHTS, PRINTS, *&c. to the greateſt Degree of Accuracy.*

1. A DRAUGHT may be taken regularly, from a drawing, on tranſparent paper, as follows. Take a piece of paper of the ſame ſize with that of the draught; rub one ſide of it with ſome powder of black-lead, till it be well and equally blacked, ſo that a finger, touching it, will hardly

be tinged with the blacking; then take the print, and laying the paper underneath it with the black ſide downwards, upon another piece of white paper of the ſame ſize, pin the three together in two or three places: afterwards, take a pin or needle, ſomewhat blunted at the point, and trace it over the outlines of your picture, which, with a little preſſing, will direct the black paper to impreſs the white, ſo as to receive every ſtroke you draw; this done, you may carefully correct what errors you ſee with your black-lead pencil, cleaning the new-made draughts ſlightly with the crumb of ſtale bread.

2. As for the draughts taken on tiffany or lawn, they are only to be laid on paper; that is, ſuch as is drawn with charcoal upon white, and ha: drawn with chalk upon black or blue paper; and then, giving each of them a knock or two with a hammer, the charcoal or the chalk will fall through them upon the papers directly in the lines they were drawn, and give you the true repreſentation of the object drawn from the life, in white lines upon the black paper, and in black lines upon the white.

Then ſtrengthen theſe ſhadows of drawings with your black-lead pencil, chalk, or red oker, upon the pieces of paper where they made the marks; for otherwiſe the lines will eaſily be rubbed out. But it muſt be obſerved, that this amendment is to be made ſoon after the lines; becauſe thoſe tender draughts will quickly vaniſh, if care is not taken to ſtrengthen them immediately. You are to begin this operation at the bottom of the drawing.

3. Another way is, by taking a thin piece of paper, and holding it againſt a glaſs-window, particularly a ſaſhed one, becauſe the interruption of

the lead in the ſmaller glazed windows will hinder part of the proſpect; then draw what you ſee from the glaſs, and afterwards the black-lead paper is to be uſed as directed before.

4. There is another way ſtill, which may be more eaſy to the hand or arm of a perſon not accuſtomed to drawing upon a paper or lawn placed upright, which is by the uſe of a camera obſcura, though to help the hand one may hold a baguette, or ſuch a ſtick in the left hand as the oil-painters uſe to reſt the right hand upon; or have ſome other reſt made for the right hand, as may be eaſily ſcrewed up and down at pleaſure. But there is this difference ſtill between drawing a piece of perſpective or view on a tranſparent paper or lawn placed upright againſt any object, and drawing by the camera obſcura, that ſuch a piece will take in more of the view or object, and from a greater diſtance than the camera obſcura will: however, the portable camera obſcura will, at firſt, be very eaſy to the arm of a beginner, by reaſon the objects appear on an horizontal plane, ſuch as a table; and the hand, having a proper reſt, will more eaſily follow the line repreſented on the plane, with great exactneſs.

The camera obſcura is a machine or apparatus wherein the images of external objects are repreſented diſtinctly, and in their genuine colours, either in an inverted or erect ſituation. This machine may be made as follows: Darken a chamber, one of whoſe windows looks into a place ſet with a variety of objects; leaving only one little aperture open in the window. In this aperture fit a lens, either a plane convex one, or one convex on both ſides, ſo as to be the portion of a large ſphere. At a due diſtance, to be determined by experience, ſpread a paper or white cloth on the wall, unleſs the wall itſelf be whitened ſo as to ſerve the purpoſe; and on this the images of the deſired objects will be delineated invertedly.

In this caſe, it is not more difficult to draw, or rather copy the objects, though they are reverſed, than to draw or copy ſeveral things which we ſee upright on the frames of tranſparent paper, lawn, or tiffany; for to trace lines will be as eaſily done one way as the other; and though the objects falling on the paper or cloth will, while you are drawing them, be reverſed, it is but turning the paper or cloth upſide down, when they are done, and the drawing will be right to the eye. But to obviate this difficulty, let the paper, or what is to receive the objects, be placed againſt the back of a chair, and let a perſon look on the ſeveral objects repreſented thereon over the back of the chair, and this will ſet them right to the eye. O , if you would rather have the images appear erect, it may be done either by means of a concave lens, or by receiving the image on a plain ſpeculum inclined to the horizon under an angle of 45°, or by means of two lenſes included in a draw-tube inſtead of one.

It is to be obſerved, that if the aperture does not exceed the bigneſs of a pea, the objects will be repreſented thereon, even though there be no lens at all. To render the images clear and diſtinct, it is neceſſary that the objects be illuminated by the ſun; and they will be ſtill brighter if the ſpectator firſt ſtay a quarter of an hour in the dark.

Care muſt be likewiſe taken that no light eſcape through any chinks, and that the wall be not too much illuminated. Farther, the greater diſtance there is between the aperture and the wall, the larger and more diſtinct will the images be; but the rays becoming thus too much dilated, the brightneſs of the image is weakened, till at length it becomes inſenſible. But the portable camera obſcura is more proper for beginners, as being more eaſy for their arm; beſides, the objects appearing on an horizontal plane, may, of courſe, be drawn with greater exactneſs.

The conſtruction of a portable camera obſcura may be as follows: Provide a wooden cheſt, in the middle of which raiſe a little turret either round or ſquare, open toward the object. Behind this aperture incline a little plain mirror to an angle of 45°, which will reflect the rays upon a lens convex on both ſides, included in a tube. At the end of the focus of the lens, place a table covered with a white paper to receive the image; and laſtly make an oblong aperture to look through. By means of this machine the images will be exhibited perfectly like their objects, each clothed in their different colours; whereby any perſon, unacquainted with deſigning or drawing, will be able to delineate any thing to the greateſt degree of accuracy and juſtneſs; and thoſe even well verſed in painting, will find many hints by it to perfect them in this art.

5. Thus far we have ſhewn how any perſon may copy a draught, print, or piece of painting, or even make an exact repreſentation from the life; but we ſhall yet add two other methods, both eaſy and entertaining, not hitherto mentioned, for taking of draughts or drawings, which are as follow. Prick with a pin the outlines of the print or drawing you deſign to copy, and then laying the ſame on a ſheet of paper, take a powder-puff or tuft of cotton, dipping it now and then in charcoal-duſt, and beat it over the pricked lines through the picture, by which means you ſhall have full directions marked on your cloth or paper ſufficient to finiſh a juſt drawing.

6. The other way is by making ſuch an impreſ-

ſion from the print as ſhall give a juſt copy of it; and it is of great uſe when we want to carry every ſtroke of the engraver along with us; which method, if you are very careful, will indeed but very little ſully the print.

For this end, take ſome white or green ſoap, which mix with ſuch a quantity of water, as will bring it to the conſiſtence of a jelly; with this mixture rub the print, and with a wet ſponge gently wet the paper deſigned for receiving the impreſſion; then laying it on the print, cover all with two or three other pieces of dry paper, and rub it very hard all over with any thing that is ſmooth and poliſhed; and thus the wetted paper will have upon it the reverſe of the print you rubbed it upon, with every diſtinct line in the original, if you have been careful to rub it equally.

CHAP. XIV.

SECRETS *of copying Drawings*, &c. *continued*; *alſo for taking off Medals*, &c. *various ways*; *with ſeveral other curious* PRECEPTS *for the Uſe of Painters*, *Statuaries*, *Founders*, &c.

I. *To take a Drawing with* FIXED INK.

TAKE a thin ſheet of paper, and rub it all over with freſh butter, as equally as poſſible, then dry it well by the fire, and rub the buttered ſide with either carmine, lamp-black, black-lead-powder, or blue bice finely ground, till it is all equally coloured; taking care in rubbing on any of theſe, that the colours will not come off by a very ſlight touch of the finger. Then lay the coloured ſide of this buttered paper upon a piece of clean paper, and lay the print you deſign to copy upon the buttered paper; afterwards with a fine pin, or needle blunted a little at the point, trace the outlines of the drawing carefully, by which means you will have a good copy of it upon your white paper; which may be touched afterwards with crayons, or the like colour.

II. *To take the Impreſſion of a Print with* RED INK.

Mix ſome vermilion finely ground with linſeed oil, but not ſo much but what it ſhall ſtill be liquid enough to run or flow in a pen. With this trace the lines of your print; and then with a ſponge dipt in water, wet the back ſide of the print, and turn the printed ſide down upon a piece of white paper, ſo as to lie ſmooth: then lay over that a piece of dry paper, and preſs it hard in every part: and the lower white paper will receive the impreſſion. But if you have a linen-preſs, it is better to put your papers between two of the leaves, and ſcrew the preſs as tight as you can, by which means you will have a fine impreſſion.

III. *To take Draughts, Writings,* &c. *with red* LOOSE INK.

Take ſome vermilion finely ground, and mix it with fair water in a gallipot with ſome cotton in it, ſo as that it may run very free in the pen: with this mixture draw over all the ſtrokes of your print, imitating both the finer and ſtronger lines; then with a ſponge dipt in gum-water wet a piece of clean white paper, and while it is wet turn the print upon it; and preſſing it well, take off the print, and you will find all the ſtrokes remain on the clean paper; and as ſoon as it is dry the vermilion will be fixed to it.

This ſort of ink has ben uſed frequently in writing any thing deſigned to be engraved; for by turning the writing ſide of the paper down upon a copper-plate covered with bees-wax and white ground, rubbing it very equally, the impreſſion will be upon the wax.

IV. *Taking Draughts with blue* LOOSE INK.

You may likewiſe make ſuch a ſort of ink with blue bice and common water as will run very finely in a pen, and ſerve for the ſame uſe as the former ink.

V. *To take off a Drawing in a ſtanding* RED COLOUR *by tracing.*

Take vermilion finely ground, and mixing it with a little freſh butter, rub a clean ſheet of paper on one ſide with this mixture, ſo that it may bear a ſlight touch of the finger without leaving the paper; then laying the coloured ſide of this paper upon a clean ſheet, lay your print upon the other ſide of the coloured paper; and then trace every line you think proper, as already directed in tracing a draught with fixed ink: but be ſure to pin the three papers together at the corners, to prevent their ſlipping, which would inevitably ſpoil your work. This impreſſion made by tracing will hold without rubbing or preſſing the papers. The quills of a ſwallow, after they are thoroughly dry, are very good for tracing.

By mixing carmine with ſome freſh butter, and colouring a paper with it in the ſame manner, you will obtain a more beautiful colour; and by colouring a paper in like manner with blue bice and butter, you may have the drawing blue.

VI. *To take the natural or lively Shape of any* HERB *or* TREE.

Firſt take the leaf you would copy, and gently rub the veins on the back ſide of it with a piece of ivory, or ſome ſuch like matter, ſo as to bruiſe them a little; afterwards wet the ſame ſide gently with linſeed-oil; and then preſs it hard upon a piece of white paper, and you ſhall have the perfect figure of the leaf, with every vein in it juſtly expreſſed: this impreſſion being afterwards coloured will ſeem truly natural, and may be uſeful to ſuch as would remember plants.

VII. *Another Way of painting the* LEAVES *of Plants, ſo that the Impreſſion ſhall appear as black as if it had been done in a Printing-preſs, is as follows:*

When the leaf is dry, take ſuch a ball as the preſſmen uſe for blacking the types, and rubbing it equally over with printer's ink, ſtrike it gently four or five times on the back of the leaf, till all the veins are blacked with the ink; then laying the leaf on a flat board or the like, with the back ſide upwards, clap a piece of white paper well moiſtened on the leaf; and preſſing it pretty hard, but not ſo as to bruiſe the fibres, you ſhall have a fine impreſſion.

But this may ſtill be done to greater advantage by means of a piece of wood in the form of a cylinder, about a foot long, and an inch and a half diameter, the middle part about ſix or eight inches long, being covered with a woollen cloth rolled three or four times round it. With this cylinder roll the paper over the leaf four or five times backwards and forwards, and you will have a curious impreſſion.

But where printer's ink is not conveniently come at, the following method may be made uſe of. Rub the back of the leaf, as before directed, with burnt linſeed-oil: then, ſtrewing ſome powder of black lead, or, for want of that, ſome charcoal or ſmall-coal-duſt, or the powder of burnt cork, upon a ſmooth board, ſo as equally to cover it, ſtroke the powder gently over; and oiling the back ſide of the leaf, clap it upon the board; then laying the white paper upon the back of the leaf, preſs or roll it as before.

If none of theſe ingredients are conveniently had, take vermilion, and mixing it with freſh butter to the conſiſtence of printer's ink, cover your printing-ball with it: daub it over the back of the leaf, and take your impreſſion as before.

Where vermilion is uſed, bice may alſo be made uſe of, either with butter or oil, by grinding blue bice with ſome burnt linſeed-oil, and uſing it as before: thus you may have a fine red or blue ink, proper for impreſſions of this ſort, but the blue is preferable in colouring leaves, becauſe it is an agreeable colour for the green ſort.

It may be obſerved, that the reaſon why the back of the leaf is the proper ſide to make the impreſſion from, is becauſe the ribs or veſſels riſe on that ſide above the fleſhy part of it; and therefore being coloured with any of thoſe inks, they are the fitteſt to give an impreſſion; whereas, in the foreſide of the leaf, the fleſhy parts riſe, and theſe fine fibres are ſunk between them.

VIII. *To take off the* LEAVES *of* PLANTS *in Plaiſter of Paris, ſo as that they may afterwards be caſt in Metal.*

Thoſe perſons who caſt in metal have frequent occaſion to uſe leaves of ſeveral ſorts, in order to embelliſh their work; theſe are generally made from models done by the hand, which take up a great deal of time, and even at laſt are imperfect; but the following way, which is communicated by a gentleman from *Italy*, is greatly preferable, and much eaſier.

Soon after you have cropped the leaf you deſire to take an impreſſion from, lay it between the leaves of a book, till once it ſhall lie flat; then, upon a ſmooth board with a ſtrong gum-water, made of gum-arabic, fix the foreſide or front of the leaf to the board; when this is done, raiſe round it a little wall of coarſe paſte, half an inch high; or, if you can conveniently, ſurround your piece of wood with paſteboard, or card-paper, ſo cloſe as that it ſhall hold a liquid for ſome time; then oil the back of your leaf, as directed below in the method for caſting of medals; and pour on water and plaiſter of Paris as there directed, which, when it is dry, will give you an exact impreſſion of every vein of the leaf, and from which you may eaſily make a mould to caſt in as you fancy.

IX. *An expeditious Method of taking the Impreſſion of any* BUTTERFLY *in all its Colours.*

Having taken a butterfly, kill it without ſpoiling the wings, which contrive to ſpread as regularly as poſſible in a flying poſition; then, with a ſmall bruſh or pencil, take a piece of white paper, waſh part of it with gum-water, a little thicker than ordinary, ſo that it may eaſily dry; afterwards laying your butterfly on the paper, cut off the body cloſe to the wings, and throwing it away, lay the paper on a ſmooth board, with the fly upwards; and laying another paper over that, put the whole preparation into a ſcrew-preſs, and ſcrew it down very hard, or otherwiſe preſs it, letting it remain under that preſſure for the ſpace of an hour. Afterwards take off the wings of the butterfly, and you will find a perfect impreſſion of them, with all their various colours marked diſtinctly, remain upon the paper.

When this is done, draw between the wings of your impreſſion the body o the butterfly, and colour your draught of the body after the life.

X. *To take off the Impreſſion of* MEDALS.

This may be of uſe to ſuch as would preſerve to themſelves good ſpecimens of fine draughts of curious medals, eſpecially as it is eaſily executed, and with but a trifling expence.

One way is as follows: Take iſinglaſs, and breaking it in pieces, diſſolve as much of it as is neceſſary over the fire in a quantity of water ſufficient only to cover it, taking care to keep it ſtirring till the whole is diſſolved. This done, with a hair-bruſh, ſtroke ſome of the glue over the medals whoſe impreſſions you would take, after placing them as horizontally as you can, and when you have covered them perfectly all over, let them lie till the glue is hardened; and afterwards, with the point of a pin, or needle, raiſe the edge of the glue from each medal, and the whole impreſſion of the medal in glue will fly off as hard as a horn, with all the fine ſharpneſs of the medal as it was ſtruck.

This glue may be made of whatever colour you pleaſe, by mixing the colour in the water the glue is boiled in. The impreſſion muſt be dried immediately, but very regularly, and not in a hot ſun, nor in any damp place.

If you uſe iſinglaſs without any colour mixed with the water, you may, as ſoon as you take the impreſſion from the medals, breathe gently on the concave ſide of them, and then lay them upon the thickeſt ſort of leaf gold, which will ſtick to them; and by ſhining through the iſinglaſs will appear like a gold medal: but if we would imitate a copper medal, we ſhould mix carmine with the water that we diſſolve our iſinglaſs in.

Although water may do very well for diſſolving the iſinglaſs in for this purpoſe, yet, brandy or ſpirits of wine will give the glue a much greater ſtrength, ſo as not to be ſubject to ſoften in a damp air.

XI. *To take the Impreſſion of large* MEDALS.

Firſt rub the medals gently over with a tuft of fine cotton moiſtened or greaſed with ſweet oil; then having ſome melted brimſtone, enough to cover the medal half an inch thick, put a hoop of card-paper round the edge of it, and pour the melted brimſtone on it, but not too hot; as ſoon as it is fixed and hardened, take off the hoop of paper, and the impreſſion on the brimſtone will come clean from the medal, which ſhall ſerve for a ſharp and correct mould, wherein you may caſt another with plaiſter of Paris. But brimſtone ſhould not be uſed on ſilver medals, becauſe it will effectually change their colour. Therefore, to take ſilver medals off, bind them round, after oiling them, with a hoop of ſome ſtiff paper, as before, and mixing a little plaiſter of Paris with water, fill the hoop with it; then immediately fill the caſe in a ſprinkling manner with the ſame plaiſter, till it hardens; and when it turns dry, take it off from the medals. But from thoſe moulds caſt in brimſtone that are concave, you muſt again caſt ſuch medals in plaiſter of Paris, and they will be convex, oiling the mould and uſing the plaiſter of Paris as before. By this method you may take off any medal or fine bas-relief with great exactneſs, even ſo as to form medals from them in any ſort of metal.

XII. *Another Way of taking off* MEDALS *is as follows:*

Procure ſome thin pieces of lead, and placing the medal horizontally on the top of a firm poſt or any ſteady place, lay a piece of harder metal flat over the lead, and place a piece of a round turned ſtick over that, ſuch as is uſed in the ſtaff of a houſe-bruſh; ſaw off about five or ſix inches in length, and holding that tight with the left hand, on the lead and flat piece of metal, ſtrike the top of the ſtick a ſmart blow with a large hammer, and it will give the lead a perfect impreſſion of the image of the medal. But this muſt be done by one ſingle blow, to render the impreſſion perfect.

XIII. *Various Ways of taking off* MEDALS.

Take the ſhavings of paper, and boiling them till they are tender, pound them well in a mortar, ſo as to reduce them into a paſte; then boil them again in ſpring-water with a little gum-arabic: let this mixture ſtand ſome time to ſettle: then pour off the water, ſtraining it through a ſieve or linen-cloth, and the remaining part of this mixture will be an excellent ingredient either to preſs into any moulds, or upon any medal: for when the paſte is dry, it will come off very ſharp.

Some medals that are under-wrought cannot be taken off this way; therefore, in ſuch caſes, you ſhould take common glue, and melting it, fix a hoop of paſteboard, *&c.* round the edge of the medal, and pour on the glue hot; the medal having been firſt oiled with a tuft of greaſed cotton.

When the glue is dry and hard, take off the hoop, and the glue will fly off from the edges: and it will, as being ſubject to bend and give way, which the things formerly mentioned are not, come very eaſily off. But the glue ought to be made ſtrong, and ſhould be poured on one third part of an inch thick.

When an impreſſion has been taken by this means, you muſt then hoop your mould of glue with either card-paper or paſteboard, as before directed, taking care to oil it ſo that no bubbles or bliſters may be ſeen; then you may caſt your plaiſter of Paris in it, and you will obtain, by theſe means, a good copy of the medal. When this is dry, the glue will fly off, or may be broken off, and there will remain a good pattern to caſt from.

Alſo, a putty may be made of linſeed-oil and fine-ground ſtarch, which being well worked together into a paſte, will take a good impreſſion from any medal. By means of theſe moulds you may caſt good medals of bees-wax: but they will come off much ſharper if the mould be in brimſtone, than if it be in plaiſter of Paris. But then your wax ſhould be as well blanched or whitened as if it was uſed for wax-candles; however, it will be neceſſary to greaſe the mould before the wax is poured in; and though white wax is here recommended, yet it will not be beſt that the copy of the medal be white, becauſe the dark colours ſhew the medal much better.

If you would have your copy of a red colour, mix vermilion with the wax, while it is melting; and if you would have it blue, put in ſtone blue well beaten, or ground, into the melted wax.

As ſoon as theſe wax medals are cold enough to take off, you ſhould lay ſome leaf-gold upon them, preſſing it down gently with a piece of cotton, without rubbing it backwards and forwards; and that will gold your medal. When you caſt medals in plaiſter of Paris, to make them look like ſteel or metal, rub them over with a tuft of cotton lightly greaſed with oil: then ſtrewing over them ſome powder of black lead, rub them well with ſuch a bruſh as is uſed for the teeth, till the whole is equally covered, and this will give them a fine metal gloſs. You may make theſe medals in plaiſter of Paris look like box, by boiling them in linſeed-oil; and this will harden them to ſuch a degree as to bear the bruſh, to clean them when they turn foul, or dirty. If you would have theſe medals look of a yellow colour, boil a little pearl-aſhes in a pint of water, till it makes a ſtrong lixivium; then put in half a quarter of a pint of French berries: boil this till the liquor is of a ſtrong yellow, and uſe it with your plaiſter of Paris inſtead of common water.

If you would have the medals look green, the fine, tranſparent gum of verdigriſe, mixed with the plaiſter of Paris, will give them that colour; and for a ſilver colour, leaf-ſilver or tin-foil may be uſed in the ſame manner as the leaf-gold for the gold colour: for the copper colour, German leaf-copper may be uſed.

XIV. *To take off Impreſſions in Plaiſter of Paris from* COPPER-PLATES.

Oil the plates a little, and binding them about either with card or other paſteboard paper, pour on them ſome of the fineſt plaiſter of Paris and water; and finiſhing the work with plaiſter till it becomes dry and hardens, you will have a ne impreſſion or draught of the lines on the plate in the plaiſter, which you may make uſe of to draw from as you may have occaſion.

XV. *To take off the fine Engravings from* WATCH-CASES, SNUFF-BOXES, &c.

Hold them over the ſmoke of a candle, till they are quite black; then wiping off the black with the ſoft part of the palm of your hand, lay a piece of white paper, a little wetted with a ſponge, over the engravings; and over that clap a thin piece of flannel, or brown paper, preſſed down very hard, which being rubbed, the paper next the picture will obtain as fine an impreſſion as if it had paſſed through a rolling-preſs.

PART II.

The Doctrine of WATER-COLOURS, *for illuminating Prints, &c. in the beſt Manner.*

CHAP. I.

Of COLOURS *in general.*

COLOURS are to be diſtinguiſhed as follows: the firſt is the white colour; next the yellow; next the orange; then the red; after that, the purple; afterwards the blue; and laſtly, the black. It is to be obſerved, that white and black are the extremes of colour: yellow is the leſſer point of colour towards the white; the next to that is the green; and after it the blue.

With regard to the colouring of prints, if the paper be pure white, you are to uſe no colour on it, unleſs in the ſhaded parts; and then in painting of flowers, if they tend towards a reddiſh colour, you are to uſe a faint colour of carmine with gum-water, upon the ſhades only; if bluiſh, uſe a little faint indigo in gum-water ſlightly paſſed over the ſhades, eaſily touching upon the lights. Where there is a yellow tinge, either uſe a faint tincture of gamboge, or of French berries, which will be deſcribed among the yellows: or if the whites have a purpliſh caſt, uſe a thin cake on the ſhady ſide, ſuffering the colour only to ſhine a little into the light, which will give a luſtre to the whites; and if a greeniſh caſt ſhould be there, uſe a very faint colour of the ſap-green; or in proportion of the ſap-green mixed with the verdigriſe-green.

All theſe colours, mentioned for ſhading the whites, may be found in the following directions.

CHAP. II.

WHITES *for painting in Minature.*

1. THE beſt white ſold for painting in water-colours is flake-white: this is better than white lead ground, and, if it be pure, far exceeds it in beauty; becauſe the white lead is apt to turn blackiſh, eſpecially if it be uſed in a hard water.

2. But ſome recommend a white made of pearl and oyſter-ſhells, reduced into an impalpable powder, ſo ſoft as to feel like grounds of ſtarch, or hair-powder: this is by ſome called pearl-white, and will mix well with any colour. But if you uſe white lead, firſt rectify it with white-wine vinegar, which cauſing a fermentation, the white will ſoon ſettle; after which pour off the vinegar, and waſh the white with common water. The method of waſhing it is thus: Put the powder into a glaſs of water; ſtir it about, and preſently pour off the water, while it is white, into ſome other clean glaſs, or veſſel; then letting it ſettle, pour off the water from it, and you ſhall have an excellent white, to which, when it is ſettled, you are to put as much gum-water as is neceſſary to give it a glaze.

It is obſervable that white lead will turn black if mixed with water that comes from iron or clay; that is, in the ſpace of a month or two, you may perceive thoſe places where it lies thickeſt tinged with black; and if it be mixed with any other colour, it will ſoon change or alter it.

3. Some recommend the powder of egg-ſhells of the brighteſt colour, and well cleaned and waſhed, as very good to be ground with gum-water; or you may put a twentieth part of clean white ſugar-candy to grind with it in water: it muſt be

ground as fine as poſſible; that is, to the ſtate of an impalpable powder; and then uſe it. Some ſay it is better, if rectified ſpirit of wine be poured on it, which will clear it from any droſs that may be in it: this, it is probable, muſt be poured off, when the ſpirit of wine has done its work; and then the parts left behind muſt be mixed with gum-water again.

But it has been found by experience, that egg-ſhell powder is of very great ſervice as a white, in water-colours, and that itſelf and the oyſter-ſhell powders, well rectified and mixed with the white of an egg well beaten, will make an extraordinary mixture in other colours, and will correct them from changing or altering their qualities.

4. As to a white for illuminating of prints, the clear white of the paper is to be left uncoloured, and if it happens that the paper is apt to ſink, or to ſpread any water-colour that is laid upon it more than is neceſſary, then the way to correct it is as follows: Fix the paper in ſuch a ſtation as that it may only receive the colour you lay on to glaze, juſt as far as you deſigned it; then take ſome ſtarch boiled and prepared in water, of a middle ſtrength, and with a large painting-bruſh, ſtroke it over the black of the print; and after it has been well dried in the air, or ſun, put the print in a book with the weight upon it, to take out the crumplings which it may receive by wetting of it; and thus will any print be rendered fit to receive water-colours, which will be prevented from running further than one would have them.

5. A fine white for water-colours is made by diſſolving filings of fine ſilver or ſilver-leaf in aqua-fortis; then evaporating the aqua-fortis till it looks like cryſtals in the bottom of the glaſs: decant the other part of the aqua-fortis, and waſh the ſil-

ver five or ſix times in common water, till it is freed from the aqua-fortis, which may be known by taſting it; then dry it for uſe. It muſt be uſed with gum-water, and a little water of ſugar-candy.

6. An incomparable fine white lead-colour is made by grinding choice white lead well upon a porphyry with vinegar, ſo that it turns blackiſh: then take a pot full of water, and waſhing the white lead in it very well, let it ſettle; and pouring off the water, grind it again with vinegar: repeat this once or twice more; and you will have an excellent white both for water-colours and and painting in oil.

7. *To make a good White for the Ground, for Water or Oil-colours, proper in Miniature.*

Take a pound of glover's clippings, put them ſome time to ſteep in water; then boiling them in a kettle, with twelve quarts of water, till it ſinks to two, ſtrain it through a linen cloth into a new earthen pan: this is called glove-glue, or ſize; and to know whether it be ſtrong enough, it is only neceſſary to try, when it is cold, and has got its conſiſtence, whether it be ſtiff and firm under the hand.

The glue being made, take white chalk, and reducing it to powder, and melting the glue, while it is hot, put ſuch a quantity of white in it, as to make it ſo thick as pap: then leaving it to ſteep for a quarter of an hour, ſtir it about with a briſtle-bruſh.

Then taking ſome of this white, put more glue to it, in order to make it brighter, for the firſt or ſecond lay: this muſt be applied by beating with the end of the bruſh. Mind that you let every lay dry well before you put on another. If it is wood you work on, you muſt put on a dozen; but if it is thick paper, ſix or ſeven are ſufficient.

This done, take water, and dipping a ſoft bruſh in it, and draining it with your fingers, rub the work with it, in order to render it the ſmoother. When your bruſh is full of white, you muſt waſh it again, and alſo change the water when it is too white. You may likewiſe ſometimes make uſe of a wet linen-rag inſtead of a bruſh. Your work being very even, let it dry, and when it is ſo, rub it with ſhave-graſs, r a bit of new linen-cloth, to make it ſoft and free.

CHAP. III.

Of YELLOW.

1. THERE are ſome objects which have the appearance of gold ſhining through the colours of green, red, or blue; ſuch as ſome ſort of flies and beetles, and the cantharides. This golden tranſparency is very well imitated by laying ſome gold-leaf on the ſhaded part of the drawing, giving in a little to the light ſide of the print. The way of laying on the gold-leaf, is by waſhing the part where the gold is to be with ſtrong gum-water, and when it is ſomewhat dry, by laying on the gold as ſmooth and even as poſſible, preſſing it down cloſe with cotton. But in doing this, care muſt be taken that, in laying on the gum-water, you do not exceed the limits you would have the gold appear to ſhine. In this caſe the gold is to ſhine only through the tranſparent colour which is to be laid on.

It muſt be obſerved, that the gold-leaf will not receive the water-colours regularly, and for that reaſon it muſt be ſtroked over with a little thin liquor of ox-gall in a painting bruſh of camel's hair, by which means it will receive any colour that you have a mind to paint upon it, and will hold it. The greens may be firſt, the verdigriſe green or ſap green (which colours ſhould be deſcribed in their places); the reds may be lake or carmine; the purples, lake and fine indigo, or carmine and indigo; and for the blues, indigo on the dark ſide, and on the light a little ſtroke of ultramarine blue, juſt to ſhine into the light, which will have an admirable effect.

2. There may be found upon roſe-trees in *June* and *July*, a kind of beetle of a gold and green colour, which may ſerve for a direction in this kind of painting. But if gold itſelf be uſed, it will be beſt to poliſh it, which may be done in the following manner:

There may be ſeen in ſome manuſcripts fine golden letters which riſe above the ſurface of the vellum or paper: the compoſition that raiſes them thus is ſaid to be made up of vermilion and the white of an egg, whiſked or beaten up to the conſiſtence of an oil, and worked together like a kind of paſte, and with a ſtamp fixed to the vellum or paper with gum-arabic. On this figure of a letter waſh ſome ſtrong gum-water with a pencil of camel's hair, obſerving that the gum does not reach more than the outlines; then lay on the gold-leaf cloſe with ſome cotton, and being dried, rub it with ſome dry cotton; and then poliſh it with a dog's tooth: this will make it appear as if it were really caſt in gold.

3. There is beſides this another way of working in gold, and that is performed by ſhell gold, but then it muſt be pure gold and not that brought from *Germany*, which turns green in a few days time. Before you uſe this gold, cover the ſhady parts with vermilion; and after your gold has been well rectified with ſpirit of wine, lay it on with gum-

water, which will readily mix with it; and when it is dry, poliſh it with a dog's tooth. In laying on gold, it will be beſt to leave the lights without it, becauſe it will make a much brighter appearance than if the object was covered all over with it. But if, by accident, or otherwiſe, the whole piece happened to be covered with gold, there is no better way to ſet it off, than by tracing over the ſhady parts with gall-ſtone, or, what is much preferable, the yellow made of French berries, the compoſition of which is treated of below: but it is the deepeſt that is to be uſed in this way. A little minium heightens it very much. How the minium is to be rectified may be learned among the reds. Obſerve to poliſh the gold before you uſe the minium on it.

After this colour of the gold, the yellows ſhall be treated of as they fail gradually in their ſtrength.

4. The firſt yellow is a kind of ſtraw-colour, and is made of flour of brimſtone, which of itſelf is fine enough to mix with gum-water.

5. A common way of illuminating prints is, by giving the tincture of gamboge for a yellow; and this may be of two or three ſorts, either fainter or ſtronger; the laſt to be a ſhade to the firſt, and to be ſhaded with the preparation of French berries.

6. Mr. *Boyle* ſays, that if the roots of barberries are cut and put into a lixivium made ſtrong with water and pearl-aſhes, there will be a fine yellow produced from it; this having been often tried, ſucceeded very well.

7. He likewiſe propoſes another way for making a tranſparent yellow, which is by boiling the root of a mulberry-tree, waſhed well from the earth, in a ſtrong lixivium of pearl-aſhes and water; this

will afford a yellowiſh juice, from which may be extracted a tincture much deeper than the former.

8. Yellow oker will likewiſe make another good pale yellow, but it is a colour rather of too much body for illuminating of prints; yet being well ground with gum-water, it is of uſe after it has been well waſhed.

9. The plant celandine will afford another good yellow by infuſing it in water and preſſing it gently, and then boiling the liquor with a little alum. This yellow will incline ſomewhat to green.

10. But a yellow which ſome prefer to the reſt, and may be uſed in ſeveral capacities of lights, is one made of French berries, and prepared as follows: Boil two ounces of French berries in a quart of lixivium made of pearl-aſhes and water, till the liquor gives a fine tinge of yellow to a bit of paper dipped in it; and then pour it off from the berries; let the liquor cool, and bottle it up for uſe.

Then again, put a pint of the ſame lixivium to the berries, and boil them till the liquor is as deep-coloured as gall-ſtone, and this will be fit for the ſhade of any ſort of yellows you can uſe. This may be boiled till it produces a brown colour; and will, with a little ox-gall, ſerve to ſhade any leaf-gold that is laid on paper, and is much preferable to gall-ſtone in imitating any gold-colour; and it anſwers well upon a tincture of gamboge, or any of the former yellows.

11. Next to this may be reckoned the tincture of ſaffron in common water only, which affords a bright reddiſh yellow, ſuch as would be required for an orange-colour, in covering the ſhadowed parts of a print; and when ſaffron is infuſed in rectified ſpirits of wine, there is nothing higher

but then it will fly, unleſs it be loaded with gum-arabic.

12. As for a deep yellow, with a body, Dutch pink comes the neareſt of any to the forementioned ſtrong yellow made of French berries in point of colour: but the Engliſh pink, which is ſtill made of French berries, is of a lighter yellow.

13. Alſo a good yellow colour for illuminating prints may be extracted from the roots of ginger; and with tranſparent verdigriſe it makes a fine green.

It is to be obſerved, that the Engliſh and Dutch yellow pinks are made with French berries ground to a fine powder and boiled.

CHAP. IV.

Of ORANGE-*Colour.*

AN orange-colour for waſhing prints is made by laying on a teint of gamboge; and over that ſome minium or red lead waſhed, and rendered fine and fit for uſe; it not being fine enough to paint with as it is bought at the ſhops; and beſides, it will change, or turn black in a few weeks, if it be not refined; but being well prepared, it will be very laſting and beautiful. But this you muſt take notice of, that an ounce will not produce above twenty grains of a good colour to ſtand the teſt of painters. This colour may be mixed with gamboge upon a white Dutch tile, to render it of the teint you would have it, either ſofter or ſtronger; or elſe the gamboge may be glazed over, and ſtrengthened with the tincture of ſaffron, which will make it glare into a ſtrong orange.

CHAP. V.

Of MINIUM, *the brighteſt* RED LEAD; *the Manner of preparing it.*

THE minium or red led is as heavy and ſtrong a colour as moſt we have; and prepared, is the moſt beautiful one, when it is well waſhed and cleanſed of its more weighty parts, which cauſe it to turn black.

Mr. *Boyle* directs the preparing, or cleanſing it in the following manner: Put four ounces of it in a quart of rain-water; then ſtirring it, pour off the water immediately, and let it ſettle to the bottom of every cup or glaſs you pour it into; then pouring off that water, in a day's time you will have the colour dry, and as fine as can be deſired. Afterwards put a little gum-arabic into each glaſs or cup, and as much water as will moiſten each of them.

Any of theſe may be afterwards uſed with gum-water; but if the gum you put in it at firſt make it ſtrong enough to glaze it, then you need only add to it common water; and according as your colour is leſs or more gummed, uſe leſs or more gum-water; for it is of itſelf a dead colour. When you uſe this colour, touch it gently on the yellow above mentioned that is made of the yellow berries, into the light ſide; and if it wants a ſhade, you may put a little vermilion upon it; but vermilion is too heavy to paint with, when you would illuminate your prints, becauſe it hides the ſhades of the engraving, though ſometimes they had better be hidden than appear. Some generally ſhade this minium with carmine, which gives it a fine effect, and renders it equal to the brighteſt red flower that is to be ſeen; leaving ſtill the lights uncoloured, only daſhing a little way into the lights with the minium.

When the carmine has ſhaded the minium, it may be ſhaded again with lake in the ſtronger part, to bring it to a deeper red.

CHAP. VI.

Of other REDS.

1. *Scarlet-Red.*

SCARLET may be repreſented on a plane with minium a little mixed with vermilion; but if you have occaſion to paint a flower of a ſcarlet colour on a print, let your lights as well as ſhades be covered thin with minium; and the ſhaded parts glazed with carmine, which will produce an admirable ſcarlet, ſuch as is ſeen in the flower ſcarlet martagon.

2. *Crimſon-Red.*

A crimſon colour is repreſented with carmine; but it is neceſſary that the buyer be informed, that there are ſeveral ſorts of it; ſome darker, and ſome much coarſer than others: therefore it ſhould never be bought by candle-light, unleſs of ſuch as a perſon can confide in: for between the beſt and the worſt there is ten ſhillings an ounce difference: nay, indeed, all the money that an ounce will coſt, becauſe bad carmine will but ſpoil the work.

3. Next after crimſon comes lake, which is of uſe in ſhading and heightening carmine. But it muſt be obſerved that in laying of carmine upon a print, you muſt touch your lights only with ſuch a thin teint of it as can ſcarcely be obſerved; laying it on ſtrong juſt on that part of the light which enters upon the ſhade, and afterwards laying ſome lake on the ſtronger part of the ſhade.

Lake is to be had in moſt colour-ſhops, ready prepared in ſhells for water-colours.

To make a fine lake, take half a pound of good brazil, and boiling it in three pints of ley made with the aſhes of vine-twigs till half the ley be evaporated, let it ſettle, and then ſtrain it; which done, boil it again with freſh brazil, a quarter of a pound; cochineal, two ounces, and terra marita half an ounce, adding a pint of fair water. Let this boil till it be half evaporated as before: then ſet it by to ſettle, and ſtrain it. But when you take it off the fire, remember to put in half an ounce of calcined alum, reduced to an impalpable powder, and diſſolve it, by ſtirring it about with a ſtick, adding a quarter of a drachm of arſenic.

In order to give it a body, reduce two cuttle-fiſh bones to a very fine powder, and putting in the powder, let it dry up at leiſure. Then grind it with a good quantity of fair water, in which leave it to ſteep, and afterwards ſtrain it through a cloth; and making it up into a few tablets, or cakes, ſet it to dry on a card, or paſteboard. If you would have this lake redder, add lemon-juice; and if you would make it deeper, add oil of tartar.

Another lake may be made as follows: Boil ſhavings or ſhearings of ſcarlet in a ley of the aſhes of burnt tartar: this ley having the property of ſeparating the dye from the ſcarlet ſhreds. When it has boiled enough, take it off, and putting in cochineal, powdered maſtic and roch-alum, boil the whole again, and while it is quite hot, ſtrain it wo or three times through a fine bag; the firſt ime the bag muſt be ſqueezed with two ſticks from the top to the bottom; then the groſs matter remaining being taken out of the bag, waſh it well. After this, paſs the liquor you expreſſed with the ſticks through the bag again, and you will find a paſte ſticking to the ſides of the bag, which you may either ſpread upon a paſteboard, or divide into ſmall parcels upon paper, and ſet it aſide to dry.

To make lake-columbine, ſteep half a pound of the fineſt Brazil wood of Fernambuca raſped, in three pints of the fineſt diſtilled vinegar, for at leaſt a month, the longer the better. After which ſeethe the whole in balneo mariæ, till it boils up three or four times; letting it ſettle for a day or two. After this, prepare a fourth part of powdered alum, and putting it in a clean earthen pan, ſtrain the liquor upon the alum, and ſo let it remain for a day. Afterwards heat the whole again till the liquor ſimmers, and let it ſettle twenty-four hours; then reduce two cuttle fiſh bones into powder, and having warmed the liquor, pour it in upon them, and ſtir it about with a ſtick till it be cold, and leave it again for twenty-four hours before you ſtrain it. Remember, that it muſt be firſt ſtrained upon the alum, before it is poured upon the cuttle-fiſh bones.

4. But a liquid colour not much inferior to carmine itſelf may be made of the raſpings of Brazil-wood: this colour is in the tranſparent crimſon, and is made as follows: Boil an ounce of the raſpings of Brazil-wood, ſold at the dry-ſalters, and at ſome colour-ſhops, in twelve ounces of pale ſtale beer, and a little alum, till the colour of the liquor is as ſtrong as you pleaſe, which may be diſcovered by dipping a ſlip of white paper into it. When this colour is as you would have it, paſs it when cooled into a linen cloth, and bottle it up for uſe.

And if you would bring this colour to a body, take ox-blood, and dry it till it can be reduced to a powder, which being done, mix it with the liquor, and it will communicate a colour to it little inferior to a middling carmine: ſome ſay, that the blood of an ox or cow dried, will make a good body for any colour.

5. *A Crimſon Colour, from Mr.* Boyle.

Take the fruit of the berry-bearing ſpinach, which being preſſed, will yield a beautiful red-coloured juice; boil this, adding a fourth part of alum to it; then letting it cool, put it up for uſe.

6. The red beet-root baked with a little ſtrong vinegar produces an elegant red colour equal to a tincture of carmine: then pour it on alum, and it is fit for uſe, where carmine ſhould be uſed in waſhing prints, for it is a fine tranſparent red.

7. *Another Crimſon Colour for waſhing Prints,* &c. *is prepared as follows.*

Put thirty or forty grains of bruiſed cochineal into a gallipot, with as many drops of tartar-ley as will juſt wet it, and make it give forth its colour; then immediately adding to this mixture half a ſpoonful of water, or more, if the colour be ſtill too deep, you will have a delicate purple liquor or tincture. Then taking a bit of alum, ſcrape very finely with a knife a ſmall quantity of it into the tincture, and this will take away the purple colour and make it a delicate tincture. Strain it through a fine cloth into a clean gallipot, and uſe it as ſoon as you can, becauſe this is a colour that will always look exquiſitely fine if it is ſoon made uſe of; but will decay if it ſtands long.

8. *Indian Red.*

Next to theſe is the Indian red, which though it is a colour of a body, yet it is uſeful for a back ground for flowers at a diſtance, when uſed with gum-water.

9. There is alſo an earth brought from the Iſle of Wight, which has been found to mix extremely well with gum-water, though, being of a viſcous nature, it requires leſs gum than moſt other colours; and as it is naturally fit for uſe without grinding, and is viſcous, ſo it will no doubt mix with oil as well as with water. There is one thing very extraordinary in this earth, which is, that if you rub a deal board with it, it will make the board exactly of the colour of mahogany-wood, and ſtain it ſo deep, and with ſo much ſtrength, that it is hard to get it out with waſhing.

CHAP. VII.

Of PURPLE.

A FINE tranſparent purple may be made either redder, or nearer the blue, as you would have it, by boiling four ounces of raſped Brazil-wood in a pint of ſtale beer, with half an ounce of logwood, or Campeachy-wood, till the liquor is heightened to the colour you deſire, which may be known by dipping a piece of paper in it.

If you find it too red, add an ounce of logwood to the Brazil-wood, which will make it much nearer to the purple than the former; and by this method you may humour it to any degree of purple, by putting in either more or leſs logwood to the former compoſition, and fixing the colour with alum.

This will produce ſuch a clear purple as no mixture of ſolid reds and blues will do, and the receipt has been for a long time kept ſecret. It is ſaid, that the beſt purple colour that can be made, may be compoſed between the carmine and indigo, to ſtrengthen which, on the red ſide, you may add lake between the lighter and darker part; and ſo lake, when it is uſed in the ſame way, on the foregoing purple, or the liquid crimſon, produces a very fine effect.

The colour may be varied, and made either redder, by putting more carmine, or bluer, by uſing more indigo, which, being mixed on a white Dutch tile, will ſhew itſelf.

A fine purple colour may be made of the groſs part or ſediment of lake-columbine, both for oil and water-colours, as follows:

Take the ſediment of lake-columbine, which falls to the bottom of the vial in which is the bone of the cuttle-fiſh, let it dry, and grind it; there will be no lake ſo fine as this; and if you mix it with lake, it will give it a better body, beſides more ſtrength and vigour.

CHAP. VIII.

Of BLUE.

1. THE ultramarine blue is not only the firſt, but the beſt ſort of bright blue we have, as it gives a ſpirit to all paintings where blues are uſed. This colour is made from the lapis lazuli diveſted of its gold, and ground into an impalpable powder, which is done as follows: Take half a pound of lapis lazuli, and putting it upon red-hot coals, let it ſtay there till it is red-hot: then quenching it in very ſtrong vinegar, and grinding it upon porphyry, or any ſuch hard ſtone, with rectified brandy, to an impalpable powder, make a paſtil, with which the lapis is to be incorporated: for the making of this paſtil, take bees-wax, turpentine, roſin, and linſeed-oil, of each a quarter of a pound; and melting the whole together over a ſlow fire, when it begins to boil, pour it into a glazed pot: this

is the paſte of ultramarine. Take of this paſte a quantity equal to that of the lapis, knead them together upon the marble, and being well incorporated, let them remain for one night; after which, to bring out the ultramarine that is in the paſte, pour clean water upon it, and knead it with your hands as paſte is kneaded, and the ultramarine will come out; for the receiving of which, place a porringer or other proper veſſel under your hands, and let it ſettle in this water till you ſee the ultramarine at the bottom of it.

If your colour ſeems to be clammy or naſty, you may correct it thus: add thereto tartar, diſſolved in water, as much as will drown it, and let it reſt for one day at leaſt; then waſh it in warm water, and you will by that means have it correct and well purified. Ultramarine muſt be choſen of a high colour and well ground, which may be known by putting it between the teeth; for if it feels gritty, it is a ſign that it has not been well ground.

To know whether it be pure and unmixed, put a little of it into a crucible, and heating it red-hot, if the powder does not change its colour after trial, it is certainly pure; but, on the contrary, if there be any change or black ſpecks in it, then it has been adulterated.

2. The Pruſſian blue is next to ultramarine in beauty, if it be uſed in oil, though it is not agreed on whether it will hold ſo well as the other, particularly as not having the body of the ultramarine. The Pruſſian blue does not grind well in water, becauſe there is ſuch an oily quality in it, that it does not mix kindly with water, and at the beſt will change, as it is now prepared in the common way. Attempts have been made to make it a blue ink, which indeed has held the colour for a

month or two, but then turned to a muddy yellow. And when you put your pencil with gum water into a ſhell of this blue, you will find that where the water ſpreads, the blue will turn yellowiſh, till the body of the colour is well ſtirred up; and after all that can be done with this colour in water, it will only ſerve to ſhade ultramarine with: but in oil it may ſerve very well, for the preſent, to ſupply the place of ultramarine.

3. Blue bice is a colour of good brightneſs, and the next to the Pruſſian blue. It is alſo a colour of a good body, and will flow pretty well in the pencil, eſpecially if it be well waſhed, as is directed to be done of the whites and minium.

4. Saunders blue is alſo of very good uſe, and may ſerve as a ſhade to ultramarine, or the blue bice, where the ſhades are not required to be very deep, and is of itſelf a pleaſant blue to be laid between the lights and ſhades of ſuch a flower as is of a mazarine blue.

5. The lacmus or litmus blue, is another beautiful colour, and will run in a pen as free as ink: being made of lacmus, or, as ſome term it, litmus, which is ſold at moſt druggiſts ſhops. But as this colour is never to be met with prepared for water-colours, we therefore ſhall give the following method of preparing it, according to Mrs. *Mariana*. Take an ounce of lacmus, and boil it in about a pint of ſmall-beer-wort, till the colour is as ſtrong as you would have it; then pour off the liquor into a gallipot, and let it cool for uſe: it will ſoon become a jelly, and by degrees will grow hard.

But this colour is to be opened again and made liquid by water, ſo as to be uſed in ink, and will be either paler or darker, as it is made thicker or thinner. This affords a bright colour, and has extraordinary effects: for it is not only a beautiful but a holding colour. This colour, if it be touched with aqua-fortis, immediately changes into a fine crimſon, little inferior to carmine, and ſinks quite through the paper, ſo as not to be got out; ſo that when it is uſed as a blue, it is beſt to keep it from aqua-fortis, or ſuch ſtrong acids. It is a good ſhade for ultramarine or blue bice, where the ſtrongeſt ſhades ſhould not be extremely deep; and for colouring of prints it is very good, as it is a tranſparent colour, and goes a great way.

6. Indigo blue makes the ſtrongeſt ſhade for blues of any other, and is a ſoft warm colour, when it has been well ground and waſhed with gum-water, by means of a ſtone and muller. It is made of what lightneſs you pleaſe, by putting more gum-water to it; and by how much the leſs gum-water is put to it, the darker it will be. Before you uſe it upon a print, it will be proper to try it upon a Dutch tile; for it runs warmly in the pencil, and ſo perhaps may otherwiſe prove too ſtrong for your deſign, which is always to be taken care of, when a flowing colour is to be laid over the dark ſhade of a print; which ſhade will much heighten its blackneſs, and even make it appear quite black.

7. *A fine Blue, from Mr.* Boyle.

Take of the blue leaves of rue, and beating them a little in a ſtone-mortar with a wooden peſtle, infuſe them in water, juice and all, for fourteen days or more, waſhing them every day till they are rotten; and at laſt beat them and the water together till they become a pulp, and let them dry in the ſun.

This will produce as good blue as indigo, and be much ſofter; but in order to keep it a long time, when you beat it the laſt time, add a little powder of gum-arabic to it, of which you may put more or leſs, as you would have it more free or tenacious in the working. This is an excellent blue for ſhading, has a good body, and runs warm in the pencil.

8. *A tranſparent Blue, from Mr.* Boyle, *equal to Ultramarine.*

This is a beautiful blue, the chief ingredient of which is the cyanus or blue cornbottle-flower. This flower has two blues in it, one of a pale colour in the larger outward leaves, the other of a deeper colour in the inner leaves, or middle of th flower. Both theſe will do, being ſeparated from the buttons and caſes they grow in; but the deep blue leaves in the middle produce by much the beſt colours; this may be obſerved by rubbing the leaves while they are freſh, ſo hard upon a piece of good writing-paper, as to preſs out the juice, which will yield an excellent colour that will not fade for ſeveral years. This part of the flower is therefore the principal, and what may be depended on, and ſhould be picked from the reſt of the flower-leaves the ſame day it was gathered, or as ſoon afterwards as poſſibly can be. A good quantity of theſe middle-leaves being procured, preſs out what juice you can from them, and adding a little alum to it, you will have a laſting tranſparent blue of as bright a ſtanding colour as can be deſired, ſcarce inferior in beauty to ultramarine, and very durable.

As for the outward flower-leaves, which are much paler, it is not certain that they will anſwer the end, but ſome trials may be made whereby that may be known alſo. Let the flowers be gathered about the beginning of June, or in July or Auguſt; but the preparation of the colour, by picking out the middle deep blue flower-leaves, and preſſing out the juice, muſt be done with all the expedition poſſible, or elſe they will loſe their perfection.

It is probable, that if the leaves of theſe blue cornbottle-flowers were cured in the ſame manner as ſaffron is, they would produce a much greater body of colour from which a tincture might be drawn with more eaſe, than if preſſed raw or freſh from the field.

In order to do this, ſuch a kiln muſt be prepared as is uſed for curing of ſaffron, in which may be made a ſmall charcoal fire that may communicate a heat to the top of the kiln, which is to be covered with a hair-cloth; upon this ſhould be laid four or five ſheets of white paper, ſuch as is uſed in curing of ſaffron: afterwards a parcel of the picked flowers are to be laid on to the thickneſs of two or three inches, laying them cloſe and flat with a knife, and ſprinkling them with ſome gum-water. Then the cake of flowers is to be covered with two or three ſheets of paper, and a board, with a ſmall weight laid on for a few minutes; after which the board is to be taken off, and the cake of flowers to be turned on the kiln, taking hold of all the papers with both hands; and when it has been rightly placed, take off the upper papers, and ſprinkle the cake a ſecond time with ſome gum-water; then ſettling the cake again with a knife, let the papers be laid on as before, with the board and weight for a minute or two; after which let the papers be turned again and again, till the cake of flowers becomes united, and of the thickneſs of a cake of ſaffron.

In this operation you will find the flowers grow darker and darker every time they are turned, till at length the cake will look of a deep blue tending to black, from whence a tincture may be eaſily drawn. During this operation, great care ſhould be taken that the fire does not ſcorch the flowers, but that it be as conſtant and gentle as poſſible, which will be a ſure way to bring the cake to a good colour.

But it will not be improper for any perſon, who ſhall undertake the curing of this colour, to conſult the methods of curing ſaffron, of which they may be informed either in a treatiſe of the method of curing ſaffron written by Mr. *Douglas*, or in another by Mr. *Bradly*, in his monthly treatiſe of huſbandry and gardening.

CHAP. IX.

Of BLACK.

THE proper black for water-colours is ivory-black, which, if pure and well ground, is of uſe in painting in miniature, but it is not proper for colouring prints, being too heavy a colour, and hiding the beautiful ſtrokes of the graver, unleſs done with great care; however, if it be neceſſary to uſe black for the darkening a print, rather chooſe a ſtrong tincture of good India ink than the ivory-black; but to colour pieces in miniature, uſe the ivory-black, prepared as follows:

Grind the ivory-black well in gum-water, till you perceive a kind of oily liquor ſettle to the bottom; this liquor mix with as much of the ivory-black as you think will be proper to make it flow freely in the pencil, and it will bear an extraordinary gloſs; and if the object is ſhining, ſuch as the wings of ſome beetles, mix with ſome of it a little white upon a Dutch glazed tile, till you find it light enough to receive the ſhade; and then make another lighter mixture of the ſame, which, being uſed on the brighter part of the ſubject, will produce the effect you deſire.

CHAP. X.

Of GREENS.

1. GREENS are allowed by all to depend upon the yellow and blue; and any green colour, whatever you pleaſe, may be made with them. Gamboge is one of the firſt yellows, which may be made to produce five or ſix greens with verdigriſe, according as the gamboge is in the greater or leſſer proportion; if it abounds, it will make a tolerable oak green; and being mixed with a greater quantity of verdigriſe, it will make a fine graſs green.

2. But the yellow, which ſome prefer before all others, is made of French berries (as already deſcribed under the yellows), which is either deeper or fainter as the liquor they are boiled in is more or leſs ſtained with them; if it be very thin, it makes a good glaze all over the verdigriſe, and, as it approaches nearer to Dutch pink or gall-ſtone, commands almoſt any colour we want; being agreeably mixed with the tranſparent verdigriſe; and is ſtill tranſparent.

3. In like manner, a yellow drawn from the roots of barberries, and alſo that drawn from the roots of the mulberry-tree, will, in a great meaſure, produce the like effect, being mixed with the tranſparent verdigriſe. As for the verdigriſe itſelf, it produces a fine bluiſh green, flows eaſy in the pencil, and may even ſerve as an ink to write with.

4. The way of preparing the tranſparent verdigriſe is as follows: Take ſix ounces of common verdigriſe (the diſtilled verdigriſe not anſwering this purpoſe ſo well), break it into little pieces,

and boil it gently in a quart of white-wine vinegar, keeping it continually ſtirring, and, when you perceive it to boil, add a little tartar broken; and continuing ſtill to ſtir it till you find the liquor of ſuch a colour as you would have it, that is, till it is of a fine tranſparent green with a bluiſh caſt, which you may know by dipping in a bit of white paper, then pour it through a linen-cloth into an open veſſel, and ſet it to cool; and when it is quite cold, bottle it up for uſe. Remember to cork the bottle cloſe, for being expoſed to the air it will dry; however, it may be reduced again by common water.

This liquor ſhould be touched upon part of the lights and ſhades of a print, and the ſhades afterwards coloured with ſap green.

In the making of this green, remember that it be ſtrong enough, becauſe it cannot be ſtrengthened afterwards without the trouble of boiling it afreſh: but it may at any time be rendered as faint as you pleaſe by mixing common water with it.

5. Sap green is a colour like that of an oak-leaf, if it be uſed thin with common water: for this as well as the former wants no gum: but if it be uſed ſtrong, it will produce as dark a greeen as any. It will be proper to try the colour firſt upon a white Dutch tile; and by thinning it with water, you may render it of what ſtrength you pleaſe, and may brighten it very much by the addition of a very little verdigriſe.

There are two ways of making ſap green, *viz.* Firſt, take the flowers of blue flag iris, or flower-de-luce, and preſs them while there is any juice to be got from them; boil them gently in a glazed pipkin, till it grows thick, adding a little alum to it, and it will make a very uſeful and laſting green.

You muſt obſerve this, that in the boiling of any juice, &c. of the colours before mentioned, you ſhould always do it in an earthen pipkin; for if it be boiled in veſſels of metal, they will oftentimes change it from the colour intended.

The ſecond way to make a ſap green for the waſhing and illuminating of prints, is to take the juice of buck-thorn-berries, and though that juice ſimply will yield only a dark purple of a very baſe hue, yet either of theſe colours will mix with the liquid verdigriſe above mentioned, and will make a delicate ſhade for it.

6. There is beſides theſe another green, which is admired by ſome perſons, that carries a good body with it, and a degree of tranſparency too (as it may be made), but, as it is commonly uſed, is a colour of a full body, and fit only for painting in miniature. This is made by mixing Dutch pink with indigo to what degree of colour you pleaſe: but the high preparation of French berries with indigo is much to be preferred to Dutch pink, eſpecially as this anſwers all the intentions of Dutch pink, and carries a tranſparency with it which the Dutch pink has not.

CHAP. XI.

The Uſe and Nature of dry COLOURS.

1. BLUE BICE is the moſt excellent blue next to ultramarine, which is too good to waſh withal, wherefore we leave it out here, becauſe blue bice may do very well inſtead of it; and indeed both may be left out, ſince ſmalt may be uſed inſtead of them: however, it will not work ſo well as blue bice, which, without doubt, is too

good to uſe upon all occaſions; only when you intend to beſtow ſome coſt and pains upon your work: otherwiſe, you may uſe no other blue in your piece than blue verditer, with which you may make a very good ſhift without any other blue, that is, in any ordinary work.

2. Indigo is a dark blue that is uſed principally to ſhade with upon other blues. Indigo and yellow berries mixed together make a dark green, to ſhade other greens in the darkeſt places.

3. Blue verditer is a very bright pleaſant blue, and the eaſieſt to work in water: it is ſomewhat inclining to a green: and, being mixed with yellow berries, it makes a very good green: this is the blue moſt uſed.

4. Verdigriſe is a good green, but ſubject to decay; when it is dry upon the paper, it will be of a lighter colour than it was when firſt laid on: therefore to preſerve it from that fault, put ſome ſap green among it, to diſſolve in it, which will make it keep its colour. There is a diſtilled verdigriſe to be bought at the ſhops that is a far better green than the other, but it is ſomewhat dearer, and the other may ſerve inſtead of it.

5. Verditer green is a light colour ſeldom uſed in any thing but in colouring landſkips, and thoſe places that ſhould appear afar off; and it is good for ſuch a purpoſe, becauſe it is ſomewhat inclining to a blue, that you may make ſhift to do any thing well enough without it, for a little blue verditer mixed with copper green, and a little white, make juſt ſuch another green.

6. Sap green is a dark, dirty green, and never uſed but to ſhade other greens in the darkeſt places, or elſe to lay upon ſome dark ground, behind a picture which requires to be coloured with

a dark green; but you may do without this green, for indigo and yellow berries make juſt ſuch another colour.

7. Copper green is an excellent tranſparent green, of a ſhining nature, if it is thickened in the ſun, or upon a gentle fire; and it is the moſt uſed of any green in waſhing, eſpecially in colouring of the graſs, ground, or trees, for it is almoſt graſs-green.

8. Vermilion is the moſt perfect ſcarlet colour: you need not either grind or waſh it, being fine enough itſelf; only temper it with your finger in a gallipot, or oyſter-ſhell, with gum-water, and it will be ready to uſe: if you put a little yellow berries among it, it will make the brighter colour: this is principally uſed for garments.

9. Lake is an excellent crimſon colour, with which you may ſhade vermilion, or your yellow garments, in the darkeſt places; and being mixed with white, you may make a ſky-colour with it; or fleſh-colour, by mixing white and a little red lead with it; and it is an excellent colour of itſelf for colouring garments, or the like.

Indian lake is the beſt lake, but it is too good to be uſed in waſhing prints with, unleſs you intend to beſtow great curioſity upon your work; for the beſt ſort of ordinary lake will ſerve well enough for ordinary uſes; and this alſo will be ſomewhat too coſtly: therefore, inſtead thereof you may uſe red ink thickened upon the fire, which may ſerve your purpoſe very well, better even than lake, unleſs it is very good.

Obſerve, that if you would make a light ſky-colour of your red ink, or if you would mix it among your fleſh-colour, you muſt not thicken it; but ſhade your vermilion rather with Spaniſh brown than thick red ink, as it may ſerve very well for that purpoſe; but it is not altogether ſuch a bright and clear colour.

10. Red lead is the neareſt to an orange colour, and putting a little yellow berries into ſome of it, will make a perfect orange colour: but if you deſire to make a fleſh-colour of it, you muſt put no yellow in it. This colour is uſed in colouring buildings or highways in landſkips, after being mixed with a little white. Beſides, this is the only bright colour to ſhade yellow garments with, in order to make them look like changeable taffety. It is good alſo to colour any light ground in a picture, taking only the thin water of it; and ſo for ſeveral other uſes, as you ſhall ſee occaſion.

11. Yellow berries are moſt uſed in waſhing of all other colours: they are bright and tranſparent, fit for all uſes, and will be ſufficient without the uſe of any other yellow.

12. Saffron is a deep yellow, if you let it ſtand a good while: it is of uſe principally to ſhade yellow berries with inſtead of red lead, and it is ſomewhat of a brighter ſhadow; but you may make a ſhift well enough without this colour, for red lead and yellow berries make juſt ſuch another colour.

13. Maſticote is a light yellow juſt like yellow berries and white; and therefore you may do well enough without it, only for ſaving you the labour to mix your yellow berries with white, when you have occaſion for a light yellow; then you may make uſe of it to colour a light ground in a picture; in which caſe, ſhadow it with the water of burnt umber or red lead; that is, the thinneſt part of the colour.

14. Ceruſe is the beſt white, if it be good and finely ground: or, for want of it, white lead picked: either of theſe will ſerve well enough;

for either of them being mingled with another colour will make it lighter, and the more ſo in proportion to the quantity of either mixed with it.

15. Spaniſh brown is a dirty brown colour, and of no great uſe to colour any garment with, unleſs it be an old man's gown, or to ſhade vermilion, or lay upon any dark ground behind a picture, or elſe to ſhade yellow berries in the darkeſt places, when you want lake or thin red ink.

It is the beſt and brighteſt colour, when it is burnt in the fire till it be red-hot, though if you would colour a hare, horſe, dog, or the like, you muſt not burn it, but for other uſes it is beſt when burnt: for inſtance, to colour any wooden poſt, bodies of trees, or any thing elſe of wood, or any dark ground in a picture. It is not to be uſed about any garments, unleſs you would colour a number of old men's gowns or caps, ſtanding together, on account they muſt not be all of one colour: therefore for diſtinction and variety's ſake, you may uſe umber unburnt for ſome of them.

16. Printer's black is moſt uſed, becauſe it is eaſieſt to be had, and ſerves very well in waſhing.

You muſt obſerve, that you are not to put any black among your colours to make them dark, becauſe it will make them dirty; neither ſhould you ſhade any colour with black unleſs it be Spaniſh brown, when you would colour an old man's gown, or the like, that requires to be done of a ſad colour.

17. Ivory burnt, or, inſtead of that, burnt bone, is the beſt black, and is thus made: Take ivory, or for want of it ſome white bone, and put it into the fire till it be thoroughly burnt; then taking it

out, and letting it cool, ſtir it, and taking out the blackeſt part of it in the middle, grind it for uſe.

CHAP. XII.

Directions for making Gum, Alum, or other Waters.

1. *To make* GUM-WATER.

TAKE an ounce of fine white gum-arabic, and half an ounce of clear white candied ſugar; diſſolve theſe in a quart of fair water; then paſſing it through a fine ſieve, or a piece of muſlin, bottle it for uſe; and, as you have occaſion to uſe it, pour out a little at a time, remembering to keep it clear; for if it ſhould prove dirty or foul, it will ſpoil your colours. By adding a little coloquintida to the ſolution of the gum, *&c.* it will prevent the flies from ſpoiling your work, if it ſhould chance to be expoſed.

Or gum-water may be made thus: Pour a quart of pure ſpring-water into a jar glaſs, and hanging in it, tied up in a fine woollen rag, a ſufficient quantity of pure white gum-arabic bruiſed; let it hang till the gum is diſſolved: then putting your finger into the water, if you find them ſtick together, as if they were glued, your water is too ſtrong or full of the gum; and therefore you muſt put more fair water to it; and, if you find it too weak, you muſt put in it more gum, adding, if there is any occaſion for it, the coloquintida as before.

With this water moſt of the colours are to be tempered; and with ſo much of it, as that being touched when dry the colour will not come off. It is to be obſerved, that if the colour gliſters, there is too much gum in it.

2. *To make* ALUM-WATER.

Boil four ounces of alum in a pint of fair water, till the alum is diſſolved; or thus, to two quarts of ſpring or well-water, put half a pound of powdered roch alum; diſſolving it well by boiling; then filtering it through brown paper, keep it up for uſe.

Wet your paper with this water before you lay on any of your colours, and it will prevent them from ſinking in, and will beſides add a luſtre and beauty to the colour laid on. But you muſt take notice, that if the paper is not good, it muſt be waſhed over four or five times with a large bruſh or pencil; remember alſo, that alum raiſes ſtanding colours, and preſerves them from fading.

If you deſign to varniſh your prints after they are coloured, then waſh them all over equally with white ſtarch, before you colour them, and that being dry, lay on your colours.

3. *To make* LIME-WATER.

Take ſome unſlaked lime, and covering it an inch over with fair water, and ſo letting it remain for twelve hours, pour off the clear part of the water, and keep it for uſe. By waſhing with this water you may change your ſap green into blue.

4. *To make* PEARL-ASHES WATER.

Take about half an ounce of pearl aſhes, and ſteeping this quantity for twelve hours in rain or river water, pour off as much of the water as is clear, and you will find it of excellent uſe with Brazil-wood in giving its colours an enlivening luſtre.

5. *To make* SIZE *for Water-Colours.*

Take half a pound of the cuttings of white gloves, and ſteeping them in water for ſome time, boil them with ſix quarts of water, till it be conſumed to one; then ſtrain it through a cloth into an earthen pan.

If, when the ſize has ſtood till it is cold, it feels firm under your hand, then it is ſufficiently ſtrong. You may prepare any colours with this ſize, while it is warm, after diſſolving it. The principal uſe of it is to prevent colours from ſhining by candle-light, as they would do if mixed with gum-water; on this account the ſcenes of play-houſes are painted in ſize.

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